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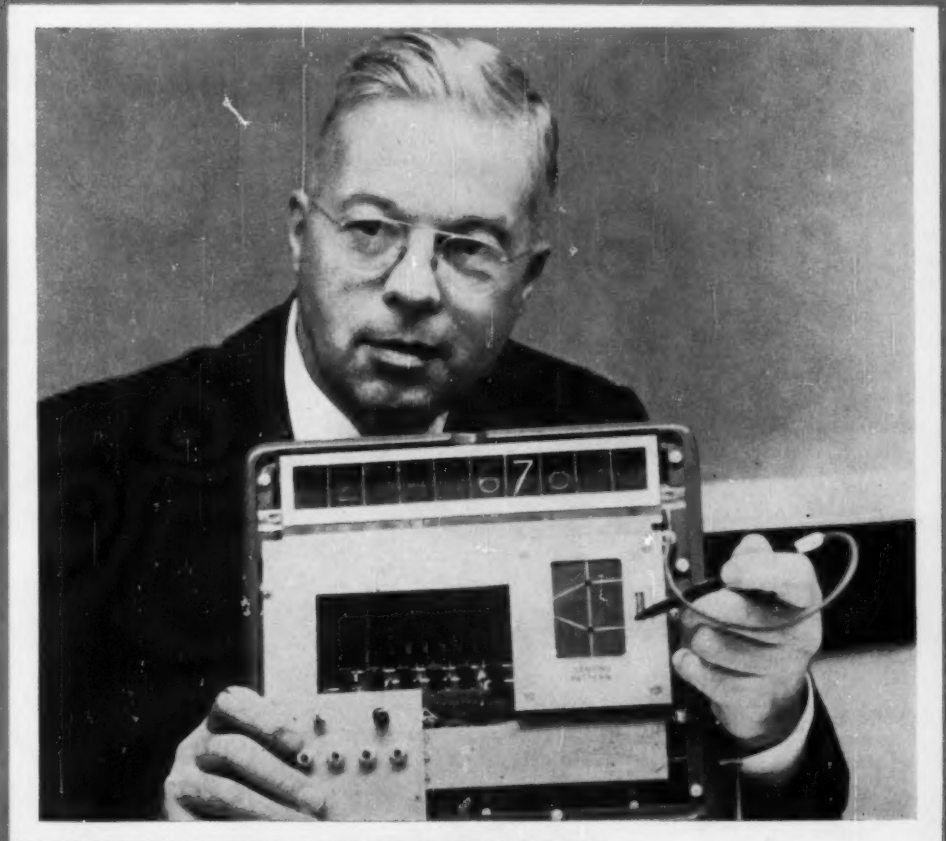
VOL. 154—NO. 1

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY



NUMBER READER

This small machine held by T. L. Dimond of Bell Telephone Laboratories is an experimental device which reads handwritten numbers. It may eventually become valuable in preparing telephone bills from toll tickets. See page 52.

Published every week on Saturday by TELEPHONY PUBLISHING CORP. 608 S. Dearborn St., Chicago 5, Ill. Subscription $4.00 per year. Entered as second class matter at the Post Office at Chicago, Ill., under the act of Mar. 3, 1879.

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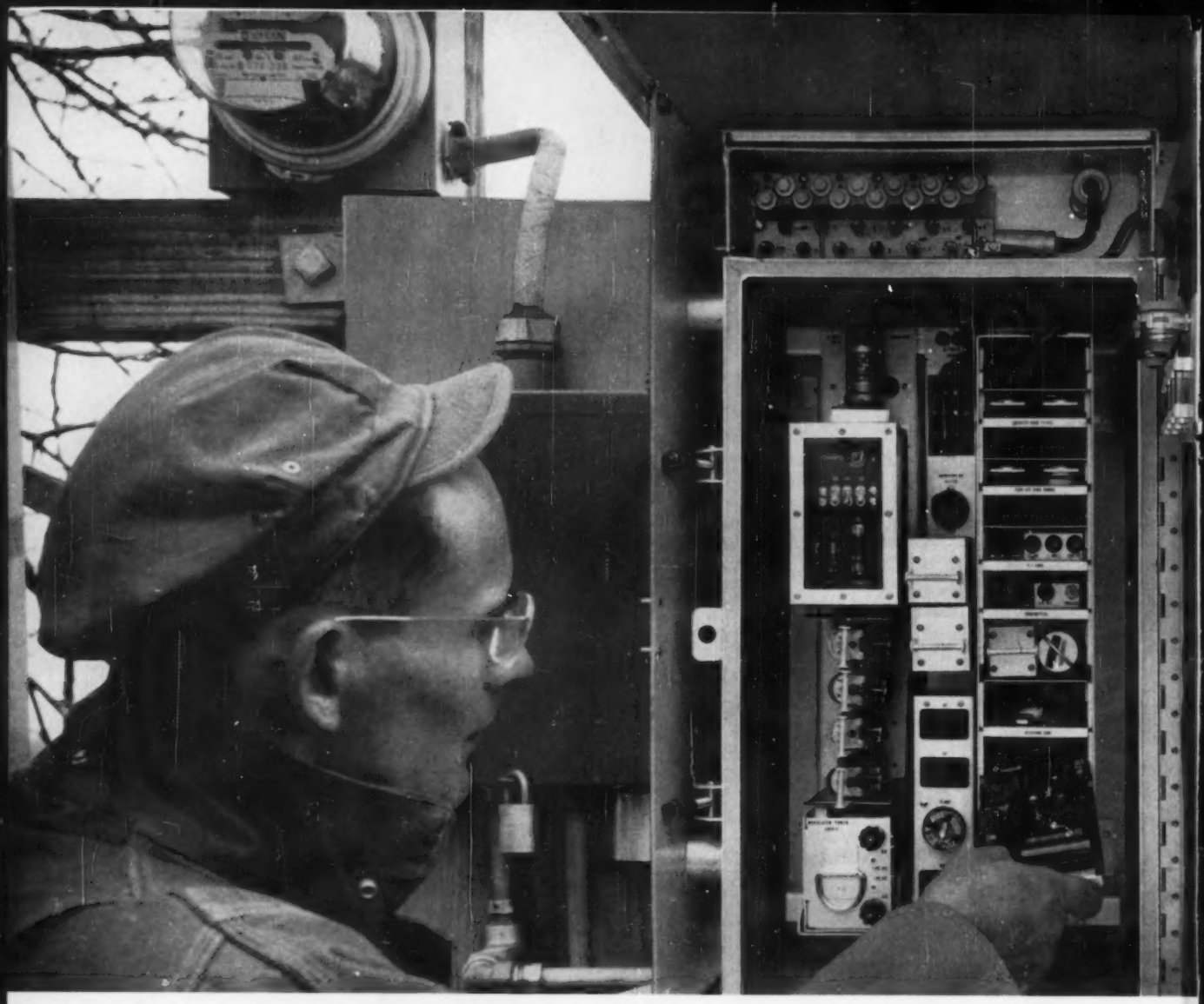
MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING



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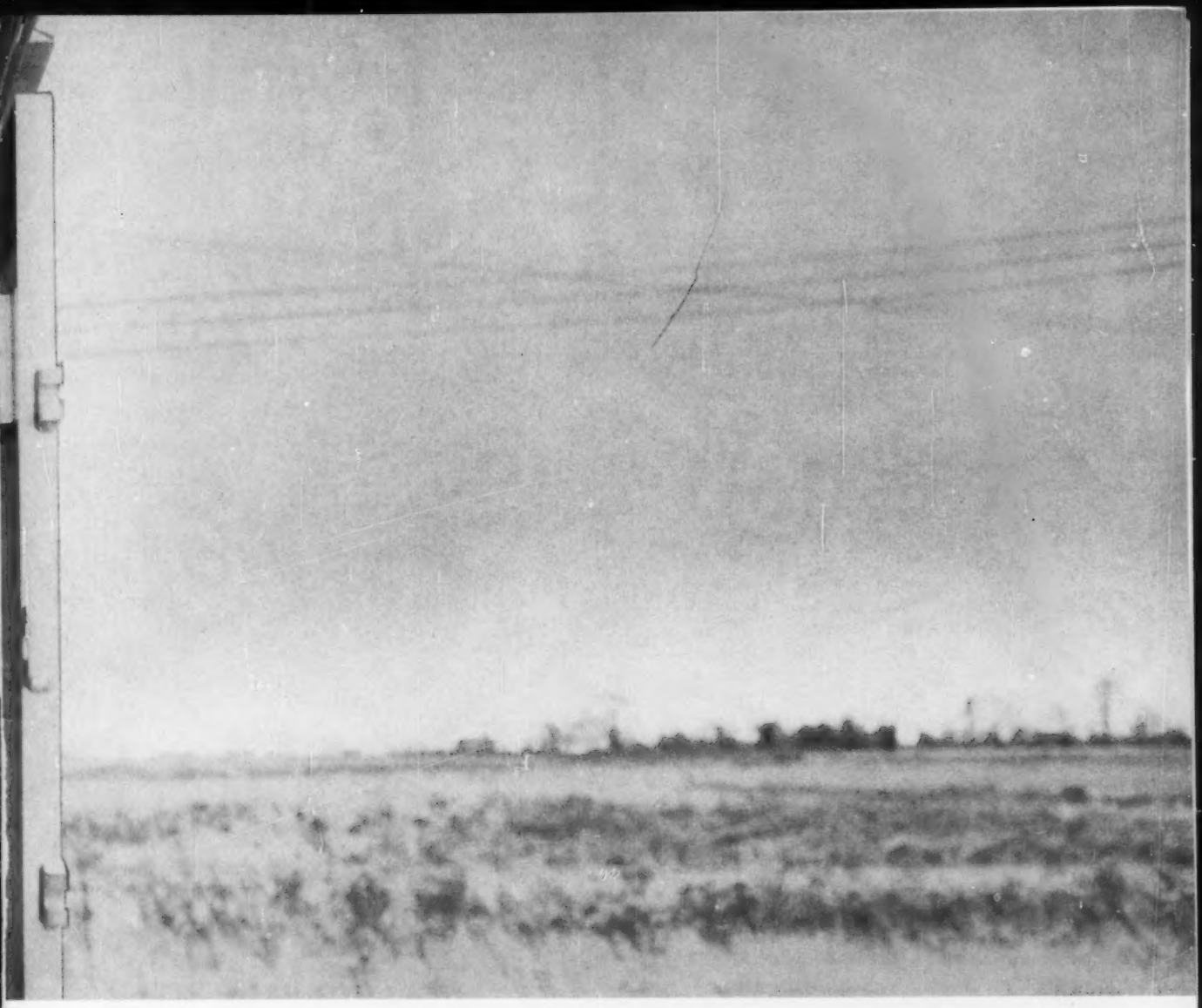

isting lines. With so little expansion of outside plant, you keep outside maintenance to a bare minimum. Transistors last much longer than tubes...use very little power. For full technical details contact the Stromberg-Carlson Sales Office in your area.

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FLASHES AND PLUGS

UNEXPECTED CHRISTMAS PRESENT. The Associated Press shortly before Christmas reported that out in Chico, Cal., 71-year-old William A. Gardenhire had just settled himself to watch a boxing match on television when his telephone rang. A child's voice said:

"Hello, Santa Claus?"

Gardenhire said no, he wasn't Santa Claus and the child obviously was disappointed.

His telephone continued to ring and ring, each tiny voice asking the same question:

"Hello, Santa Claus?"

Gardenhire, suspecting a prank, inquired of the Pacific Telephone & Telegraph Co.:

"Why are all the kids calling me 'Santa'?"

A check revealed that Gardenhire's line had become crossed with one the Chico Junior Chamber of Commerce was using for its annual project of taking calls from children who wanted to talk with Santa Claus.

A company official apologized, the AP reported.

Gardenhire reflected, then wrote to the editor of the Chico *Enterprise Record:*

"It has been many years since two little arms were around my neck and a trusting voice confided to me all the things he wanted me to get him for Christmas and this experience brought it all vividly to mind.

"If we, as adults, had even a fraction of the faith and trust in God that these innocent children have in Santa Claus, there would never be any need for armies or navies and we never would need fear atom bombs, H-bombs or sputniks.

"The greatest man who ever set foot on this earth said, 'Who shall offend one of these little ones who believe in Me, it were better for him that a millstone were hanged about his neck and that he would drown in the depths of the sea.'

"I want to apologize to the children for not being Santa Claus, but most of all I want to thank them for renewing my faith in God."

•

LONG OVERDUE. In Wheeling, W. Va., recently a Pennsylvania Railroad engineer reached the limit of his patience recently in something of a turnabout concerning blocked railroad tracks.

The engineer sat in the cab of his engine ready to wheel a freight train out of the yard, but he couldn't start. There were two automobiles on the track in front of him.

After an hour's delay, he climbed down from the cab, went to a nearby telephone and called police, who towed the cars away.

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Please notify your local postmaster and the Circulation Dept. of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

January 4, 1958

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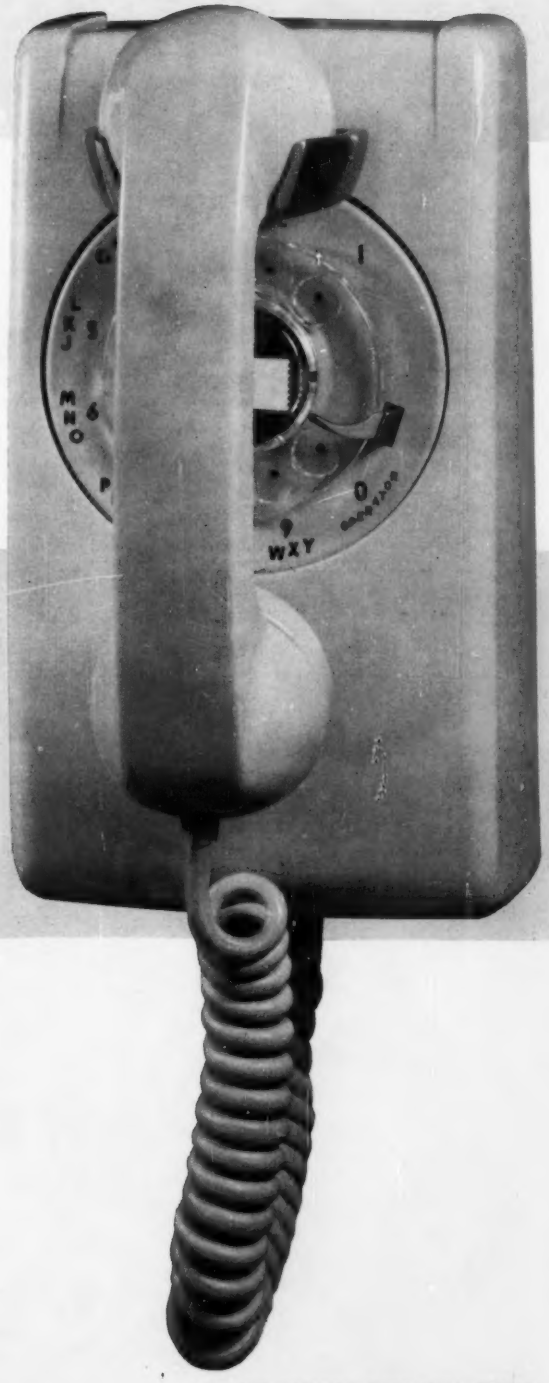
IN THEIR FAVORITE MAGAZINES,

JUST LIKE IT...

IT TO THEM



Your customers have been seeing an attractive new wall telephone in their favorite magazines. They have seen it in color ads, and in picture stories about kitchens and recreation rooms. That familiar, neat design is what your customers have in mind when they order a wall phone.

And now you don't have to sell them a different design . . . you can give them exactly what they want, the Kellogg K-500. It is available to you for immediate delivery in 8 decorator colors.

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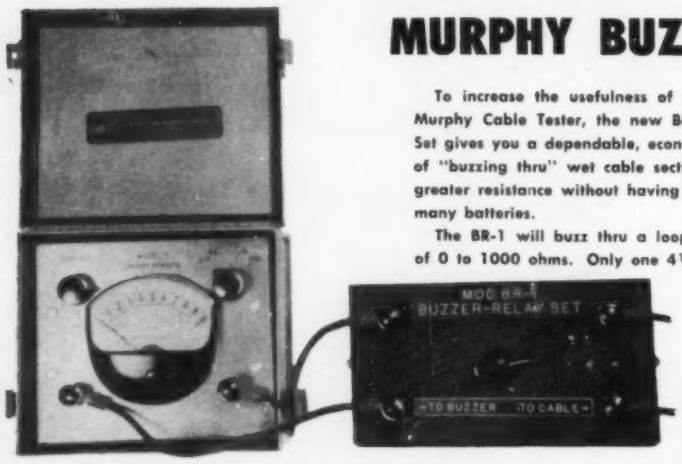
NOW YOU CAN BUZZ THROUGH WET CABLE SECTIONS AND NOT HAVE TO TEST FROM FIELD AND OFFICE ENDS

MURPHY BUZZER RELAY SET (BR-1)



To increase the usefulness of the famous Murphy Cable Tester, the new Buzzer Relay Set gives you a dependable, economical way of "buzzing thru" wet cable sections over a greater resistance without having to add too many batteries.

The BR-1 will buzz thru a loop resistance of 0 to 1000 ohms. Only one 4½ volt battery is used in the set and it is enclosed in a cabinet with a special "balanced armature" relay. Dimensions of the Murphy Buzzer Relay Set are 3½x6x3 inches. It is shipped complete with a pair of water proof cords for connecting to the Murphy Cable Tester, and a heavy duty 4½ volt battery.

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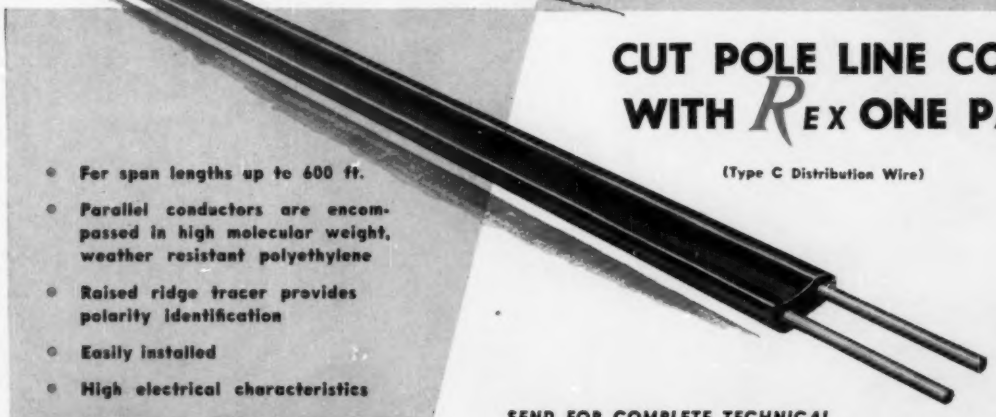

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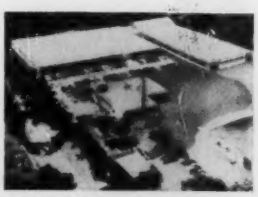

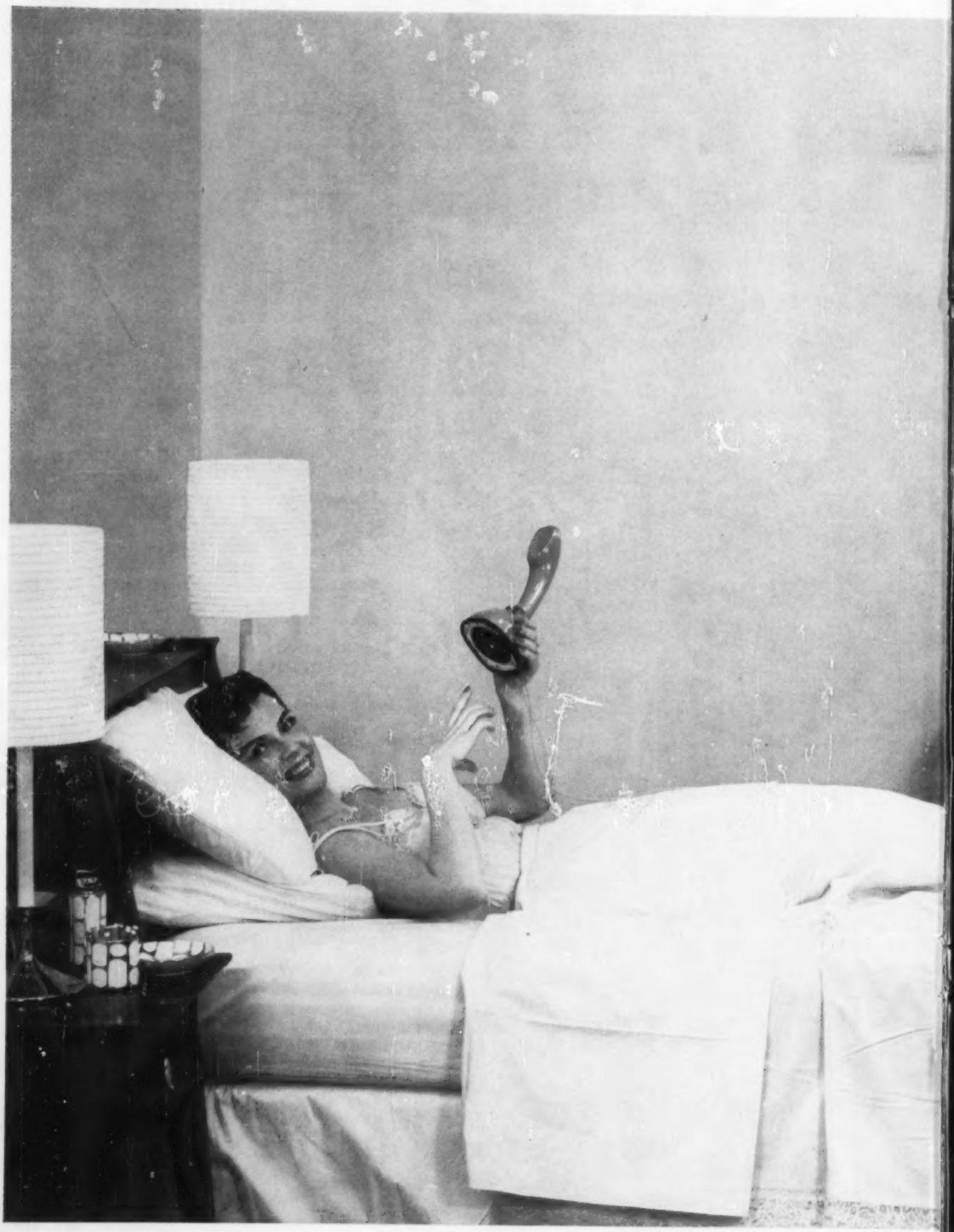

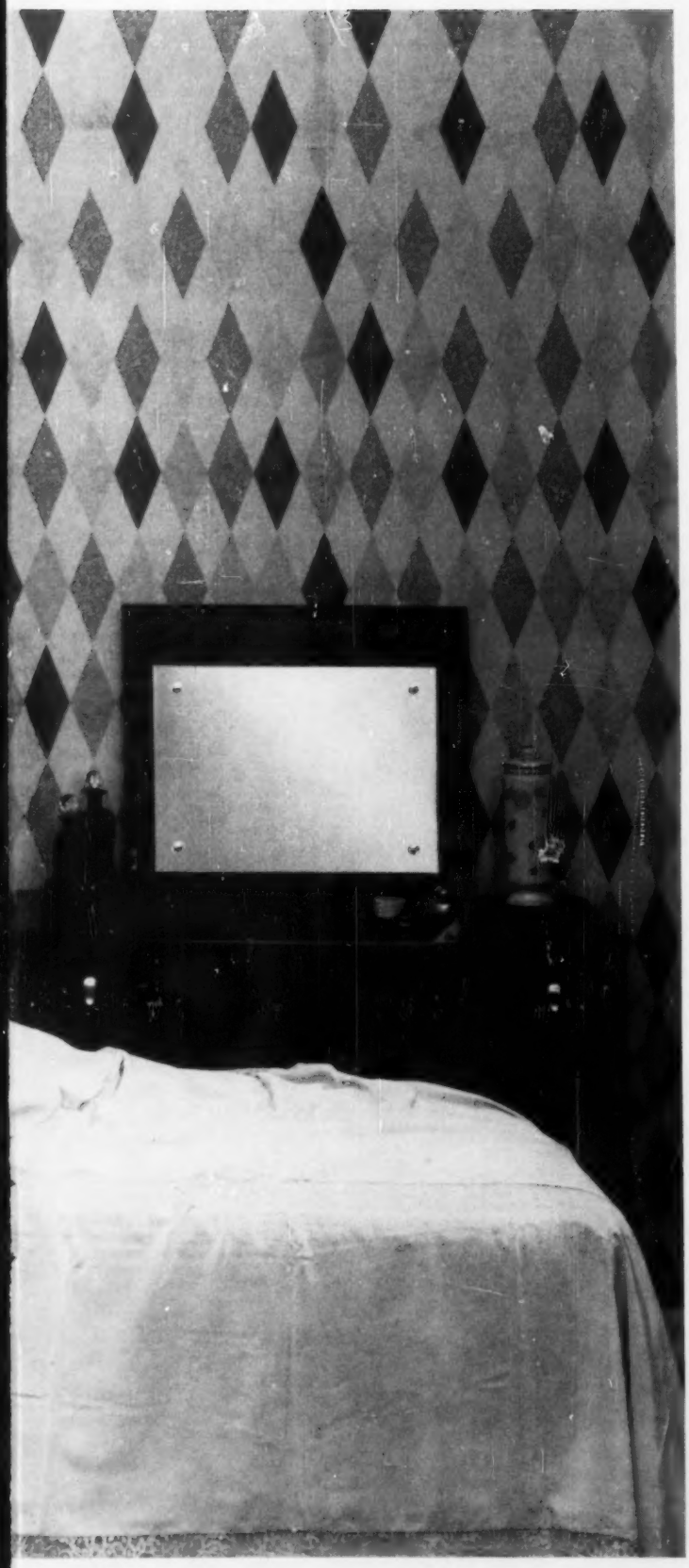

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Install your span lengths to absolute maximum with a feeling of complete security even to heavy loading zones. Transposing ANKOSEAL Line Wire is simplicity itself . . . simply twist the desired number of turns between poles. Highest quality transmission characteristics can be obtained and cross talk eliminated in rural areas.

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This Leich PABX is available for up to 40 telephones with 10 trunks to the main exchange and 6 local links. Local links are not tied up on extension dialed calls to city trunks. All the power equipment is contained in the compact switchboard cabinet.

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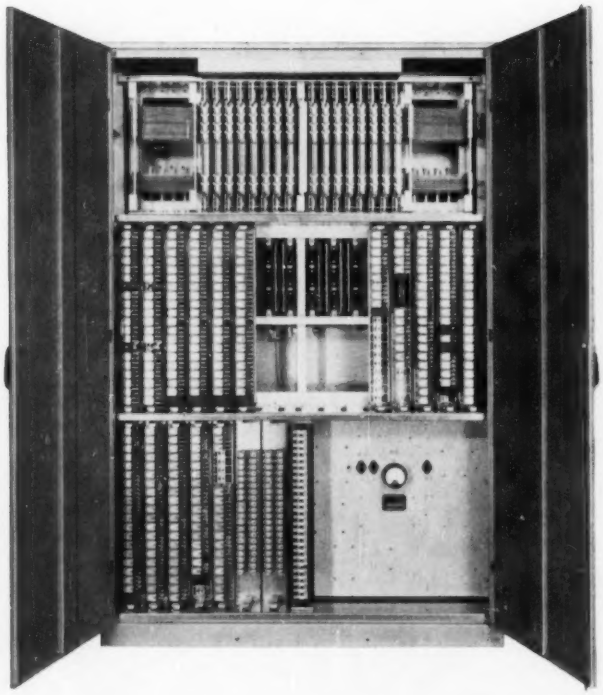

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C. Consultation calls without help from attendant.

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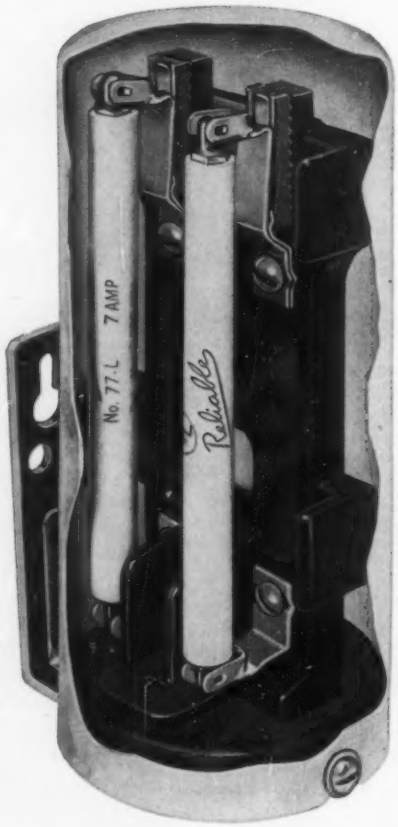
manufacturers of telephones, switchboards and related apparatus since 1907



The flexible neoprene base has integral wire entrance sealing slots and, with its tapered design, closes the cover so snugly that it is truly weathertight and insect tight.

Station Protection–A New Design

Only the fuses and the discharge blocks remain unchanged–performance and dependability continues as before. There is a phenolic fuse mount, rather than porcelain–a flexible neoprene base with integral wire entrance sealing slots instead of open wire holes–a fuse mount and terminal post redesign that puts the wiring snugly in place without removing fuses–a fuse mount that can be easily reversed to wire from right or left. All metal parts are either bronze, aluminum or stainless steel.

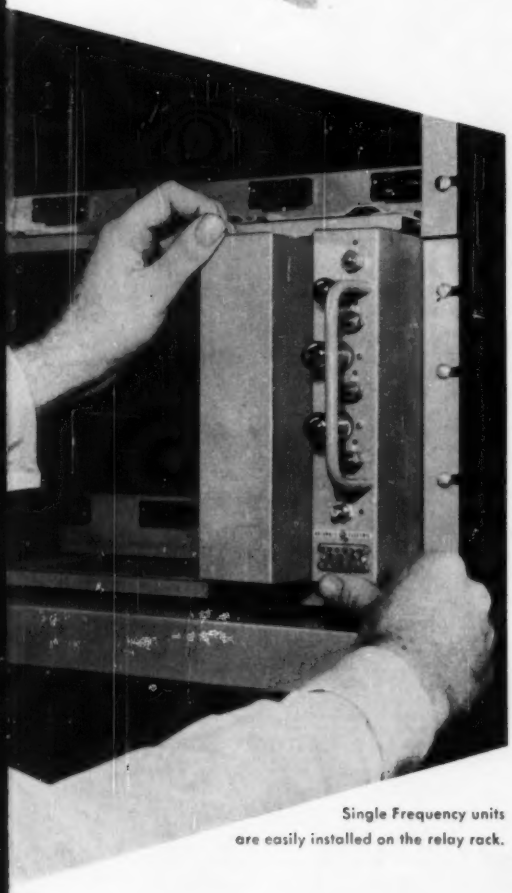
Reliable's new Series 2000 Station Protector replaces the Series 1000 with design changes only–changes that are good for the Telephone Plant.

Reliable

RELIABLE ELECTRIC COMPANY
FRANKLIN PARK, ILLINOIS

New Single-Frequency Signaling Equipment...

Provides Direct Distance Dialing on Your Existing Trunks!



Single Frequency units are easily installed on the relay rack.

What it is—Automatic Electric's new Single Frequency Signaling Equipment (ASF-1) is a device which sends dial pulses and supervisory signals over the same circuit facility used to carry conversation.

How it helps you—Single Frequency Signaling permits direct dialing between distant exchanges over existing trunks. If your company has a direct trunk to a distant city, you can dial direct, by-passing intermediate signaling relay equipment. For instance, if this trunk consists of several carrier systems in tandem, the intermediate "back-to-back" signaling equipment can be by-passed. Or, if you have trunks consisting of older type "ringdown" carrier equipment without built-in dial signaling, Single Frequency units will economically convert these trunks to dial operation. If your trunks consist of long physical plant unsuitable for DC dial signaling, you can use Single Frequency even when voice repeaters are involved. No matter what combination of facilities you are now using, Single Frequency units are employed only at the two trunk terminals.

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We'll be glad to give you additional information on how Single Frequency Signaling will help solve your long distance dialing problems. Write for Circular No. 1899. Address: *Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111.*

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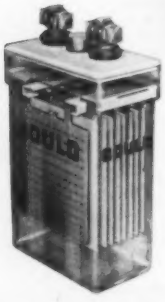

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

Representative Mills succeeds the late Jere Cooper as chairman of House Ways and Means Committee, which will consider telephone excise taxes. New York commission approves filing of tariffs for city fire and emergency call stations. Justice Department backs off FCC case on telephone company lease-maintenance radio mobile service. Missouri court upholds consideration of reproduction cost valuation in rate-making.

JUST BEFORE Christmas the nation's capital was saddened by the news that the chairman of the powerful House Ways and Means Committee had passed away suddenly from a heart attack. He was Rep. Jere Cooper (D., Tenn.), age 64, often called "the loneliest man in Congress." First elected from the Eighth District of Tennessee in 1929, Cooper had served 28 years, continuously. Losing his wife and son (an only child) at a comparatively early age, Cooper spent many long hours becoming the acknowledged expert of the subject he knew best—taxation.

For the telephone industry, the change in the leadership of the House Ways and Means Committee, in which all tax legislation must be considered, brings up an interesting name. The new chairman of the committee at the next session of Congress (which starts next month) will be Rep. Wilbur Mills (D., Ark.). This is the same Representative Mills who made such an eloquent plea on behalf of the repeal or curtailment of telephone excise taxes before the Arkansas Telephone Association convention last Fall (published in the Nov. 9, 1957 issue of TELEPHONY). It will be interesting to speculate on whether Representative Mills will now take the leadership in securing legislation for the abatement of the telephone excise taxes.

Aside from the views he has expressed on the unfairness of taxing telephone users so heavily to support government functions not related to telephone use, Representative Mills has other pronounced ideas on federal tax policies. He is generally conservative, but would prefer a balanced budget to a tax cut, if there were no other alternatives. With the increased pressure on the federal government for defense spending to take care of the stepped up international missile derby the new chairman of the House Ways and Means Committee is going to be confronted with a number of perplexing questions. But the fact that a congressman who has shown such a sympathetic and intelligent grasp of the telephone excise tax problem now takes over the strategic command of the House Ways and Means Committee may in itself be an extra dividend for the industry. It would be hard to pick a more liberal-minded tax expert in the entire House membership on this particular subject—judging by Representative Mills' Arkansas address.

Telephone Fire Alarm

The management of the New York Telephone Co. can now put on its fireman's hat and churn away on a siren. It is now official. The company is in the fire alarm business—and in the police alarm business, too. The official word comes from the New York Public Service Commission in a very interesting opinion written by Commissioner Spencer Eddy. The commission has approved the filing of regular tariffs by the New York Telephone Co. to render city fire alarm and police box service via telephone emergency call stations.

This is not an entirely new service, either for the New York Telephone Co. or for some Independent companies throughout the country. But it is apparently the first time that it has been recognized by regulatory authority as a regular and proper adjunct of conventional telephone utility service. Heretofore it has been rendered under individual contracts with various cities.

And, it has been regarded as a successful innovation, especially in such cities as Syracuse, N. Y. Advantages claimed are that it cuts down on the false alarms and otherwise speeds up the handling of emergency communications. The latest action, however, is significant in that the New York Telephone Co. was authorized to file a special tariff for rendering private branch exchange service "for voice reporting of fire, police, and other emergency alarms." Under this arrangement, the street call boxes are connected with facilities integrated with the telephone company's general system with special features to insure connection.

The commission threw out a protest filed by the largest manufacturer of traditional telegraphic alarm systems. The position of the manufacturer, and other interveners in similar "pull box" or telegraphic "call box" business, was that emergency alarm service has not heretofore been subject to regulation as a utility service. They objected to the implication that if the telephone company's special tariff were approved as a regular service, it would create a precedent for regulating other types of emergency alarm services.

The commission held, however, that approval of the tariff filed by the New York Telephone Co. could not, in any way, affect the non-regulated status of the protestants and could not adversely affect their business. The commission further ruled that, in the case of the telephone company, the willingness of the company to undertake this new

form of service was compatible with its public service obligation to render telephone service generally. It was further held that the new service would become subject to regulation insofar as it is undertaken and rendered by the telephone company—even though no such service had previously been so rendered.

Commissioner Eddy's opinion conceded that the regulatory statutes of New York were passed at the time when no such special telephone service existed or was in contemplation. Therefore, it could not have been part of the specific intent of such legislation to include emergency alarm service as part of the telephone company's responsibility. Admitting that the telephone company could not be forced to render such service, if it did not undertake to do so, the fact that the company does now want to render such service gives the commission authority to regulate the terms and receive the tariffs under which the company proposes to serve.

Commissioner Eddy drew an interesting analogy between the rendition of such a service by the telephone company and furnishing a telephone directory. Admittedly, a telephone company could not be forced to publish a directory, even though the familiar telephone directory has now become an accepted and universal adjunct of telephone service. But, once a telephone company voluntarily decides to publish and furnish telephone directories as part of its service to the subscriber, such service becomes subject to the commission's jurisdiction and may be regulated to prevent abuse and discrimination.

This decision of the New York Public Service Commission may have an even broader application than the furnishing of emergency alarm service under a regular tariff. As the horizon of telephone service is expanded with new techniques and improved facilities, the industry is bound to be confronted every now and then with an adverse established commercial interest. The expanding concept of telephone service thus comes into competition, if not collision, with the economic operation of a non-utility business already furnishing a somewhat similar service, or at least anxious to do so.

We have already seen this happen, in the case of mobile radio telephone tariff filings now pending before the FCC. In that case other manufacturers and users of mobile radio telephone equipment do not think the telephone companies should enter this field (by offering leased maintenance equipment). There probably will be other and similar instances of new developments in telephone services clashing with rival operations of non-regulated enterprises.

What the New York commission has said in this alarm service case is simply that where a telephone company can render a new form of service desired by some part of the public which is a reasonable adjunct of its established telephone service, it should be permitted to do so, under regulation. If that common sense rule is followed by the FCC Bell telephone companies should not have too much trouble in a mobile radio telephone case.

It is not as if the telephone company were trying to tell the non-regulated competitors to get out of business, or to leave the business field. It is the competitive interests which are trying to tell the telephone industry to keep out—and stay out—of the field which these interests feel should be preempted for their operations, regardless of what the general public may prefer. Needless to say, the telephone companies do not agree.

Justice Backs Off

Speaking of the lease maintenance case before the FCC, it looks as though the Justice Department, with or without the advice of a pair of its lady attorneys, has marched up the hill and then marched down again. Readers of this department may recall that last Fall the Justice Department gave every indication of throwing its weight around, if, as, and when the FCC should even consider that Bell System companies had a right to file tariffs for lease maintenance of radio mobile service—as a part of regulated telephone service.

The Justice Department, upon the advice of the aforementioned counsel, said that such service was not a part of telephone utility service but that, on the contrary, it violated terms of the Bell System's consent decree which ended the anti-trust suit against Western Electric relationship with the Bell System. In that decree both A.T.&T. and Western Electric agreed not to go into non-utility operations not subject to regulation.

In what looked like an effort to sandbag the FCC, the Justice Department threatened at that time to go back to the federal district court, if necessary, and get a construction of the consent decree, if the FCC took the view that the proposed lease maintenance service was subject to FCC jurisdiction as a regulated telephone service.

It has already been reported in this department that the FCC called that bluff over a month ago, when it ruled that the consent decree in the U. S. district court does not, of its own terms, bar Bell System companies from providing lease maintenance service for private mobile radio telephone systems. In other words, the FCC thereby proclaimed its own construction of the consent decree, and on the basis of that construction announced that it was going ahead with its hearings on the proposed tariff filings. It agreed to wait 20 days to give the Justice Department an opportunity to go back to the district court for an interpretation, if it so desired.

Now comes the Justice Department in a letter from Assistant Attorney General Victor R. Hansen, dated Dec. 11. The assistant attorney general does not back down on the department's view that the proposed lease maintenance service violates the consent decree. But it has decided to wait until the FCC has acted in this case before going back to court. Hansen's letter said the department does not believe it is "appropriate or necessary at this time" to ask the court for an interpretation of the decree. And, so, we can expect fairly prompt action by the FCC to get hearings under way in this case. Examiner J. D. Bond has already been assigned and hearing dates may be set later this month.

What has happened so far, of course, is only a procedural maneuver. Hansen still takes the position that "the final judgment [consent decree] prohibits the companies from leasing and maintaining equipment for private mobile communications systems as described in the tariff filed by them." Hansen also stands by the earlier view of the department that the FCC has no jurisdiction under the Federal Communications Act to regulate this type of business. But, inasmuch as Bell companies are not going to engage in such business, until after the FCC tells them that they could do so, the Justice Department has decided to hold its fire until that time comes—if it ever does.

REA Committee Meeting

Last month there was a meeting in Washington of the REA Telephone Advisory Committee to consider a number of matters in this field. A press conference was held after the meeting and several developments of interest were noted; but there were no major policy changes or anything really extraordinary, from a news standpoint.

It was apparently a harmonious meeting between the REA telephone staff and the representatives of various telephone companies and cooperative borrowers. Indeed, about the only real difference of opinion seemed to be

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Eight REA Loan Allocations Total $5,370,000

The Rural Electrification Administration, during the week of Dec. 9, approved the following eight loans totaling $5,370,000:

Polar Rural Telephone Mutual Aid Corp., Petersburg, N. D. (mailing address: Grafton); $200,000; Dec. 11.

The Polar Mutual's loan will furnish new and improved service for 203 rural families. The borrower plans to acquire, rehabilitate and integrate the Farmers Mutual Telephone Co., Park River, and the following subscriber-owned switched lines in the Fairdale area: Kinloss-Silvesta Telephone Co., Fairdale-Kinloss Telephone Co., East Dewey Telephone Co., and the Kinloss West Dewey Telephone Co. About 130 farm families are receiving switching service over the lines served by these companies.

New construction planned by the borrower includes an automatic central office in Fairdale. Subscribers in the Park River area will be served from the borrower's present exchange in that town.

A portion of these loan funds will be used to complete the system authorized under prior loans.

REA loans to this borrower, totaling $3,603,000, will make possible new and improved service for 5,425 rural subscribers. The system will comprise 19 exchanges. About 2,250 subscribers are now receiving dial service from the cooperative.

Irvin M. Hanson is president of the Polar Rural Telephone Mutual Aid Corp. and John G. Walters is manager.

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Minford (O.) Telephone Co.; $208,000, second loan (Dec. 11).

The borrower plans to use these funds to improve service for 110 existing subscribers of the Tri-County Telephone Co., Stockdale, and to serve 225 new rural subscribers. As a nucleus for the new service the borrower proposes to acquire, rehabilitate and integrate the Tri-County company, which is now providing magneto service. New construction scheduled includes an automatic central office in Stockdale.

A portion of this loan will be used to provide commercial office facilities for the entire system in a combined central office-headquarters building in Minford. Funds have also been included for certain modifications in that section of the system.

With its two REA loans, totaling $388,000, the borrower will be able to offer new and improved service in 868 rural subscribers. The system will consist of exchanges at Minford and Stockdale.

Howard Bennett is president and John R. Chatfield is manager of the Minford Telephone Co.

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The Western Telephone Co., Weaverville, Cal.; $2,456,000, first loan (Dec. 13).

The Western company plans to provide initial service for 1,580 rural subscribers in its area, and to improve service for its 1,976 existing subscribers. At present the company consists of automatic exchanges at Covelo, Laytonville, Weaverville and Willow Creek, and a common battery exchange at Garberville. The system also provides magneto toll station service.

New construction and rehabilitation will include additional automatic exchanges at Alderpoint, Hayfork, Hoopa and Leggett; and a new building at Garberville to house automatic facilities, toll station and commercial office equipment. The four present automatic exchanges will be expanded and retained in the enlarged system.

The borrower plans to maintain business offices at both Garberville and Weaverville, and to handle toll service for the whole system from these two exchanges. The completed system, which will consist of nine exchanges, will serve 3,556 subscribers. This includes 204 families located in remote, sparsely-populated areas who will receive magneto toll service. The Western company also expects to install nine microwave units which will reduce costs of additional pole line over difficult terrain.

A portion of the Dec. 13 loan will be used to refinance existing indebtedness of the borrower incurred in rehabilitating and expanding the present system.

W. Gilman Snyder is president and manager of the Western Telephone Co.

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Minerva Valley Telephone Co., Zearing, Iowa, $329,000, Dec. 13.

The new borrower plans to use these funds to improve service for its 711 existing subscribers, and to serve 16 farm families now without telephones. The company is presently furnishing magneto service. Central offices are located at Clemons, St. Anthony and Zearing.

With the REA loan, the company expects to construct a new automatic central office-headquarters building in Zearing, and a new automatic office at Clemons. The St. Anthony community will be served from this exchange. Service without toll charge is planned between the borrower's two exchanges.

J. A. Lund is president of the Minerva Valley Telephone Co.

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Mid-Rivers Telephone Cooperative, Circle, Mont.; $582,000 (Dec. 13).

This co-op plans to bring initial telephone service to 313 rural subscribers. In order to furnish this new service the borrower expects to add a new exchange at Sunnyside, adjacent to the present system where about 200 of the additional subscribers are located. The remainder are in the present service area.

REA loans to the Mid-Rivers cooperative total $2,220,000 which will make possible new and improved service to 2,385 subscribers. The system will consist of 13 exchanges of which 12 are in operation serving about 1,700 rural subscribers.

Everett Hill is president of the Mid-Rivers cooperative, and B. R. Allen is manager.

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Cimarron Telephone Co., Mannford, Okla.; $623,000 (Dec. 13).

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Billing Procedure Change

SAVES $1,000 PER MONTH

Making duplicate copy of monthly subscriber statement cuts paperwork and labor costs.

By KEITH E. VINE*

MAKING a second copy of our monthly subscriber statements saves the California Water & Telephone Co. at least $1,000 per month. The duplicate bill takes care of all paperwork necessary for follow-ups on delinquent bills, eliminating the need for individual typing of disconnect notices and other follow-up forms in the individual exchanges.

An estimated 95 per cent of the duplicate statements are eventually thrown away. But our experience has proved that—under today's business conditions—it is cheaper to throw away a small slip of paper, in the great majority of cases, than to expend the labor for manual follow-up on the small portion of accounts which become delinquent.

At the basis of this reasoning, of course, is the fact that California Water & Telephone, like many Independent telephone companies, has taken major steps in automating its billing procedures. We put in our first Strowger automatic toll ticketing system in the Los Angeles extended area back in 1950 and expanded the use of this equipment as quickly as possible. Through the SATT equipment, of course, we have set up an extensive Integrated Data Processing System, under which the Strowger tapes covering message unit calls are converted to IBM cards for the virtually automatic accumulation of subscriber message unit charges.

It is a compliment to our industry as a whole that automatic ticketing and billing equipment, considered revolutionary a few years ago, needs virtually no explaining or introduction to telephone men today. Rather, we have come to feel, the point for discussion lies in the paperwork end products which such equipment is used in producing.

In passing, however, we feel it might be of interest to call attention to one small phase of our tape-to-IBM-card processing cycle. A newly-developed piece of equipment has made it possible to convert tapes sent in from our exchanges to punched cards about 10 times as fast as was formerly possible. Today, we use a Telecomputing Corp. reading unit backed up by a "home-made calculator.

The Telecomputing device reads the equivalent of a full-punched card at a time rather than sensing the tapes in individual digits. Connected to this unit is a device built by our own engineers which, within the limit of up to 10-minute calls, multiplies message unit rate by length of call to develop billing units. This setup is linked with an IBM reproducing punch for the creation of the cards themselves. Thus, while the conversion to punched cards is going on at the rate of 100 calls per minute, some 85 per cent of the cards are being extended automatically. The remainder are automatically segregated and extended on an IBM 604 Calculator.

K. E. VINE

To complete the basic media needed for subscriber billing, IBM card punch operators prepare cards covering data in toll tickets written by our long distance operators.

These, along with the cards reproduced from automatic toll ticketing tapes, are grouped in control batches. Totals are run to establish balance proofs for final monthly billing.

Production of the bills themselves is under a highly-automated IBM routine. As a point of information, we bill all message unit calls in our Los Angeles extended area as one bulk figure; that is, there is no detailed listing of message unit calls dialed directly by subscribers. All these calls are added on the IBM equipment, with just the total shown on the bill. Experience has shown that public confidence in machine-produced bills is high enough so that the practice is very much worthwhile.

We must, of course, produce itemized toll statements covering long distance, telegraph and collect charges. On these, we run triplicate copies, but only one is enclosed with the subscriber's over-all face statement. At the same time, of course, we prepare summary cards for automatic entry of these toll charges onto subscriber statements.

These toll listings—as well as the

*Mr. Vine is Auditor of the California Water & Telephone Co., Monrovia, Cal.

dead-ends tailored
for jacketed conductors
Preformed Dead-Ends grip firmly, yet jacketing material won't creep
There is only one way to efficiently dead-end self-supporting cable, C-rural wire and B-rural messenger: Apply Preformed Dead-Ends over the jacket.
Preformed Dead-Ends are precisely designed and fabricated to hold firmly, but low unit pressure prevents undue creepage or cold flow. In addition, for many applications they have a neoprene coating that cushions the grip yet relieves and distributes stresses.
Preformed Dead-Ends will hold the maximum service loads of the conductor or messenger without damaging the jacket. When the jacket is weatherproofing, as on B-rural messenger, you get full protection by not exposing the conductor to the elements at any point.
For more information about dead-ending weatherproofed and insulated conductor and messenger, write PREFORMED LINE PRODUCTS COMPANY, 5349 St. Clair Avenue, Cleveland 3, Ohio. Cable Address: Preformed-Cleveland . . . in 10 years the leading manufacturer of armor rods, dead-ends, Guy-Grip dead-ends, and other line accessories.
PLP
You can look up to Preformed
Made in accordance with or for use under U. S. Patent No. 2,761,273. Other patents issued and pending.

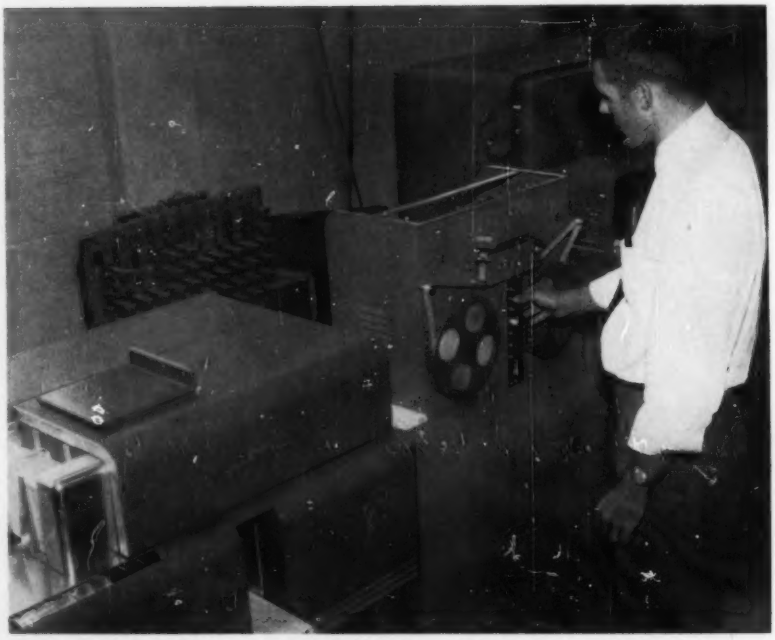
face statements—are printed on Standard Register Co.'s continuous, marginally punched Kant-Slip forms. These records are designed specifically for high-speed, precision feeding over IBM 407 accounting machines.

With the aid of Standard Register specialists, our face bills have been designed in two copies, with one-time carbon interleaved for automatic reproduction. The second copy is something of a breach of long-standing telephone company procedure. According to custom, only one copy is made of customer accounting documents to: (1) Keep paper volume down, and (2) avoid confusion of possibly collecting twice for the same transaction.

These theories made sense in their day. But, on the first count, modern microfilm has made the accumulation of paper less objectionable than it used to be. Microfilmed records are permanently organized and involve practically no file maintenance problems.

Any possible objections in connection with confusion through the creation of a second face bill copy have been overcome by the design features of our Kant-Slip forms. Our carbon copies are actually entirely different records built around the same subscriber billing information. For example:

The original copy of our face bill is made up in three separate stubs: The one at the far left is retained in the Revenue Accounting Office in telephone number order as an accounting medium. The center stub is detached by the subscriber and returned with his remittance. The stub on the far right is the actual face bill. All of these bill segments are clearly marked and identified. They are printed on white paper stock, as distinguished from the pink paper used on the carbon copies—setting them aside on sight.



T. W. Oglesby, California Water & Telephone Co. methods and planning supervisor, at Telecomputing Corp. tape-to-card converter. The assembly of relays back of the converter is the "home-made" calculator designed by Mr. Oglesby.

The second copy of the face bill also has three stubs: The one on the left is retained in the business office as a collection medium. The right hand stub is used in the business office as a disconnect notice—suitable for mailing to subscribers with little further clerical processing. The center stub on this second copy is a plant disconnect notice. It is used for automatic notification to our plant department when an account becomes sufficiently delinquent to warrant this action.

Thus, as bills are paid at our business offices, clerks destroy the two disconnect carbon copy stubs of paid accounts. On a set collection treatment date for each billing group, the remaining disconnect stubs are reviewed. In most cases, these right-hand stubs are stuffed into window envelopes and mailed.

Several days later, the files are again reviewed, and where accounts still remain unpaid, the center stub is sent to plant as notice to physically disconnect the subscriber's service. If this physical disconnect does not bring the subscriber into the business office within 24 hours, a disconnect service order is typed in six copies—one each for commercial, traffic, plant, plant accounting, revenue accounting and directory printers.

The original collection media—it should be pointed out—have remained right at their collection desks in the

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Walter Welsand, machine operator, separates completed subscribers statements by feeding Kant-Slip continuous forms through a Standard Register automatic forms burster.

TELEPHONY'S Traffic Engineering Handbook

By Gilbert R. Brackett

Jan. 4, 1958

Section 9 (continued)

Traffic Surveys

In order to do the job properly, the traffic engineer must call upon the laws of probability to help him solve his problems. He must follow the call to its termination and combine his findings with what mathematical precepts he can adopt to his use. The results are translated into quantities of equipment and the numbers of operators.

The basic measure of telephone traffic is the number of calls handled. A traffic survey is the process which provides counts of calls of different classes at intervals of such frequency as to furnish reliable data on the hourly variations as well as seasonable changes and growth. The data obtained are so arranged that they may be conveniently used for purposes such as force adjustment, equipment and building studies, estimating and analyzing costs of operation, balancing of equipment loads and assembling statistics on volumes and trends of traffic.

Generally speaking, a traffic study should cover normally busy days in normally busy weeks. Should a count be in progress and some unforeseen incident affect the traffic loads to any noticeable degree, the count should be abandoned. The Tuesday and Wednesday after the first day of the month are usually normally busy days and may be used as count days, providing they do not proceed or follow a holiday.

Traffic surveys are important and should be taken, when possible, under the direct supervision of someone specially trained in this work. All persons engaged in taking peg counts should be thoroughly indoctrinated in the details and methods and with the vital importance of accuracy. The frequency of traffic counts will depend upon the size of the office and rate of growth, and changing trends in the traffic of the office.

All traffic data used for engineering should cover the "busy hour," that continuous one-hour period of the day during which the volume of traffic is greater than during any other continuous one-hour period of the same day.

Traffic counts are usually made on the clock hour for the sake of uniform practice and coordinating data secured from different sources, such as interoffice trunking, attendants switchboard and automatic equipment.

It is important to take traffic studies soon after cutting central office equipment into service. It is in this way that a check is made on the correctness of the initial estimate, and to ascertain if the equipment is properly arranged and functioning correctly, and if it is of sufficient quantity to carry the load.

The total number of calls to be handled at the office should be estimated for the initial and ultimate periods. The data on the amount of traffic flowing through the office should be obtained. The record should cover a sufficient number of days to give a reasonably accurate base and should reflect the traffic by hours and the total day.

The regular traffic survey is an hourly count of calls for a two-day period in a normally busy week, but, occasionally, it might be well to extend the study to a full five-day coverage. However, the number of days the count covers should be governed by the needs for the study, to secure constancy of load and to obtain a representative sample of the traffic passing through the office.

Generally, trunk or switch usage volumes are determined in two ways—by counts taken manually and by counts taken mechanically. The surveys are made by counting and recording on a suitable form the number of trunks or switches that are in use in the various equipment groups. The counts should be taken over a sufficient period of time to assure that the busy hour for each group is included. Any group in which a trunk or switch is out of order, or otherwise not available for service, should be excluded from the record. A separate record should be made of each facility group in the office.

The manual method of checking traffic in dial offices involves visual observation of switches in use, a switch being considered in use when it is in an off-normal position.

In the case of line relay equipment, a test lamp may be used to determine the "in use" conditions. One terminal of the lamp shall be connected to battery, while the other terminal is used to contact the release or "C" lead. Thus, each time a busy trunk is met with, the lamp will flash. The total lamp flashes will be the number of switches in use.

Counts of busy switches should be taken at regular repeated intervals, usually on a two-minute basis. Each observation should start promptly at the prescribed time and the groups should always be observed in the same sequence and at a uniform speed to assure accuracy.

The group hours having the largest number of entries for each of the two days should be totaled. The busy hour for the group will then be obtained by averaging the two totaled entries. The result can be converted into 100 second calls (CCS) by multiplying the average usage by the interval seconds (if taken on the two-minute base by 120—the number of seconds in two minutes) and dividing by 100.

EXAMPLE:

56 switches in use $\times$ 120 seconds = 6720 seconds = 100—67 CCS.

There are several types of trunk and switch mechanical equipments which have been developed to determine automatically the number of busy trunks or switches in the trunk groups of a dial system office. Where such apparatus is available it can be used to good advantage in the interest of securing completely accurate and representative traffic data and in the conversion of traffic study manhours.

Cross Detection and the Development of a Transistor Testset

By H. L. MILLER*

MULTIPLE circuit conductors at the point of connection at apparatus or terminal strip terminals are particularly vulnerable to crosses. These may be accidental connections between two wires or one wire and central office battery or ground, either through broken insulation, solder splashes, bent terminal lugs or installer debris, such as wire clippings, lodged in the apparatus. Detection and clearing of these crossed wires is essential early in the installation test of a central office.

Prior to 1948, the accepted cross detection method consisted of a "voltmeter test" performed in the following manner. A group of conductors to be tested for freedom from crosses was grounded by temporarily strapping the individual conductors of the group together and then connecting the strap wire to office ground.

This temporary connection was made at some convenient connecting point such as a terminal strip. One terminal of a voltmeter, or other voltage indicating device, was then connected to office battery. The other terminal of the voltmeter was then touched to each terminal of the group under test to verify that all were grounded.

The temporary strapping was then removed from one conductor terminal at a time. As the strap wire was removed from each terminal, the terminal was again checked with the voltmeter for ground. No deflection of the voltmeter indicated a clear conductor, that is, one free of crosses with the remaining grounded conductors. A voltmeter deflection would, however, indicate that the conductor under test was crossed with the remaining grounded conductors.

The foregoing method of cross detection caused visual fatigue and was time consuming, due to the extra work of adding temporary strapping and then tediously removing it from one conductor at a time. The method was also impractical for use in crossbar type installations where many conductors are difficult to strap because they are terminated directly on crossbar switches and relay terminals, rather than on terminal strips.

Suggestions from the field prompted the exploration of other means of performing cross detection tests. Among these, transmission tests were devised wherein the difference in admittance to ground between a clear conductor and one that was crossed with another conductor was measured and used as a cross indication. This method was not practical for field use because of the size and complexity of the test equipment.

In 1948, a testset was developed which provided an audible indication of a cross condition and did not require an initial preparation of conductors to be tested such as temporary strapping to ground. This "whistler" testset was standardized and is widely used.*

The Whistler testset, the circuit of which is shown in *Fig. 1*, is a modified Colpitts oscillator circuit utilizing the capacitance existing between the conductor under test and the office ground as one of the frequency determining elements of the oscillator. Without a load, the circuit oscillates at a frequency between 3 and 4 KC depending on the value of the stray capacitances in the circuit.

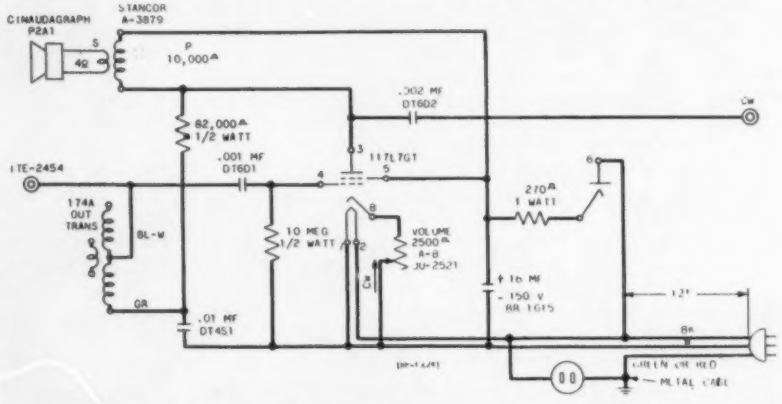


Fig. 1. 1948 version of a Whistler testset still widely used.

*See Patent No. 2,603,686, S. M. Lloyd, inventor, assignor to the Western Electric Co.

*Mr. Miller is Test Engineer of Western Electric Co.

Frequency of oscillation under this condition, varies over a range of approximately 500 to 2,500 cycles per second with conductor capacitance to ground ranging from 1,500 mmf to 100 mmf. Application of the oscillator test probe to clear conductors of approximately the same length will produce a tone of the same pitch for each conductor.

If two conductors are crossed with each other, a tone of somewhat less than one-half an octave lower in pitch, but readily distinguished from that produced by a clear conductor, will result. A conductor that is open somewhere along its run will produce a tone of higher pitch and may or may not be distinguished from a good conductor, depending on the distance of the open from the point of application of the test probe and upon the ability of the tester to recognize small changes in pitch. Applying the test probe to conductors crossed with battery or ground will stop oscillation.

A few years ago, the writer developed another test circuit which utilized conductor capacitance to ground as one of the frequency determining elements of an oscillator for the purpose of indicating "potential crosses" between cable conductors. "Potential crosses" refer to sources of trouble such as wire clippings, solder splashes, etc., that have not yet made electrical contact between the conductor under test and adjacent conductors or ground, but may make electrical contact between conductors at some future time. This testset was found to be particularly useful in crossbar, where the banjo wiring is susceptible to catching wire clippings and solder splashes.

The above testset, the circuit of which is shown in *Fig. 2*, consisted of a phase shift oscillator in which the capacitance to ground of the conductor under test became part of the phase shifting network. This set provided approximately the same change in frequency for a given change in capacitance of the conductor under test as did the Whistler testset, but oscillation took place only when the test probe was connected to a circuit under test. In addition, the probe applied an ac voltage on the order of 750 volts between the circuit under test and ground.

Although both testsets provided the same cross indication feature, a potential cross encountered by the writer's testset would cause an arc to be struck between the conductor under test and the trouble causing element. A sizzling noise would be produced in the testset's loudspeaker as a result.

This high voltage Whistler testset

(Please turn to page 48)

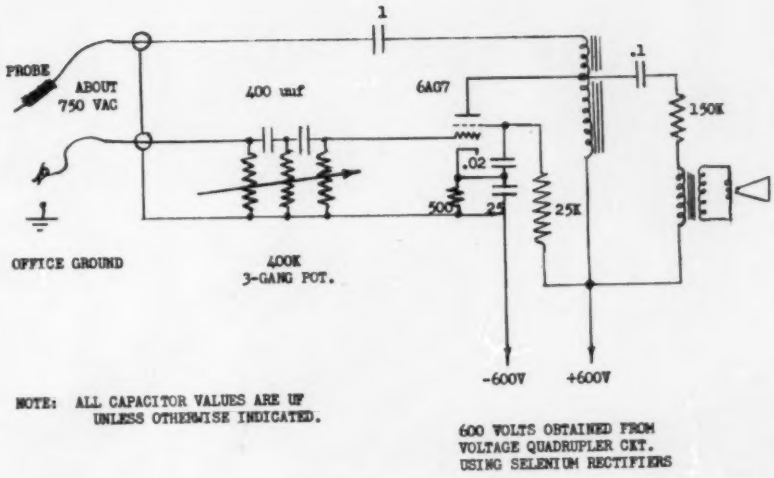


Fig. 2. High voltage Whistler testset.

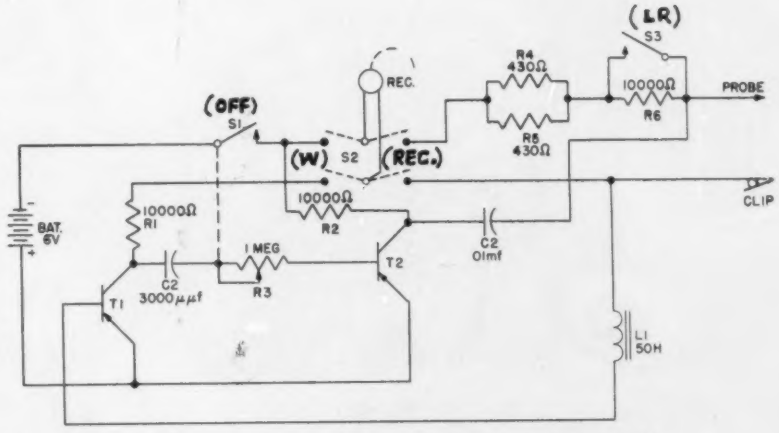


Fig. 3. Schematic of a transistorized Whistler testset.

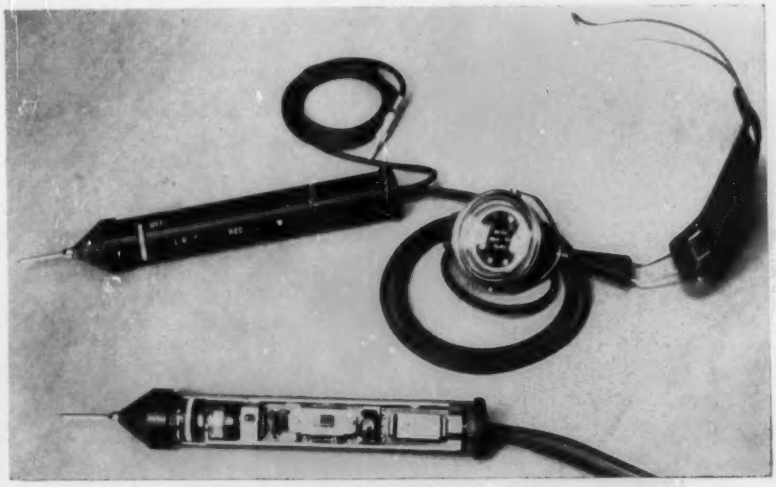
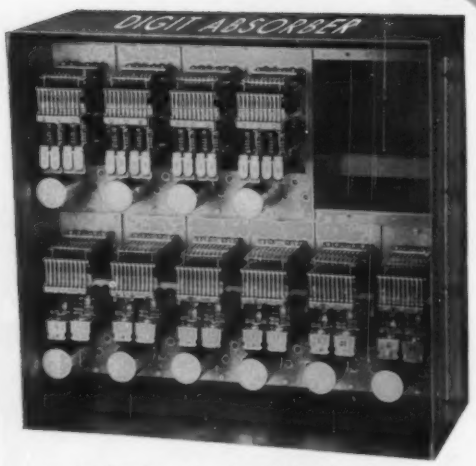


Fig. 4. A photograph of the transistorized Whistler testset.

Can your Switchboard handle

2-5 DISTANT DIALING?



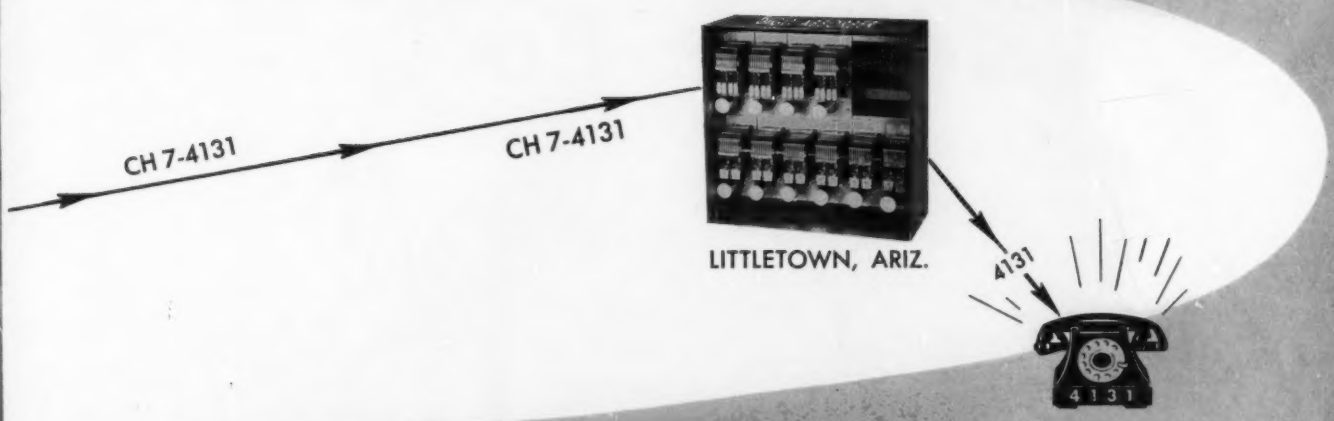
Typical Relay Case for Digit Absorber.

The Universal Digit Absorber employs simple circuity with a magnetic impulse counter, together with other standard relay apparatus of recognized manufacture.

Other UNIVERSAL Telephone Equipment:
Code-to-Selective RINGING CONVERTER
COMPUTER INTERCEPT

INDEPENDENT

It can with a UNIVERSAL DIGIT ABSORBER*



DIRECT DISTANCE DIALING REQUIRES A 2-5 CODE

The nationwide dialing plans for operator and direct distance dialing require that all stations be recognized by a 2-5 code. Few dial switchboards of earlier design have provisions for adding digit absorbing features economically. The Universal Digit Absorber fills this need easily and at nominal cost. Installation requires very little time.

The ever-increasing requirements of Extended Scope Dialing on a universal numbering arrangement are easily handled by the Universal Digit Absorber. The Digit Absorber is a factory assembled, fully-wired, applique unit that can be added to any existing dial switchboard to pad in three digits of exchange code (ABX) or four digits in the case of a small digit dial unit.

There are two types of Universal Digit Absorbers, depending on the complexity of the exchange codes assigned:

*19-S unit will handle exchange codes, as illustrated by AB-X, where the "X" digit is not a duplicate of the "A" or "B" digit.

*19-L unit is required where the "X" digit is a repeat of either the "A" or "B" digit.

In addition, Universal offers a Trunk Digit Register unit which can be applied to "Trunk on Line" dial units where five or more digits are required to be delivered to a 3 or a 4 digit tributary exchange.

*Pat. Pend.

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6100 EXCELSIOR BLVD. MINNEAPOLIS 16, MINN.	165 PROSPECT STREET PASSAIC, N. J.

Mail this coupon to the nearest address.

Gentlemen: I am interested in your Universal *Digit Absorber* for 2-5 Numbering.

Name_____

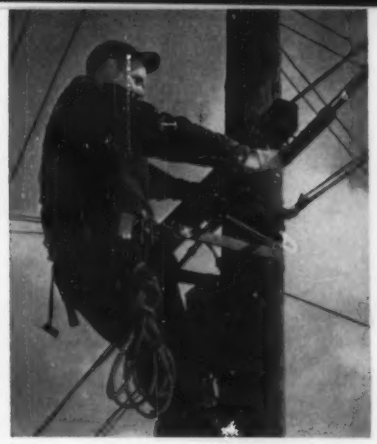
Position_____

Firm_____

Address_____

City_____ State_____

T-1-4



THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

FOR A TELEPHONE company to ask its customers to "throw brickbats" at them on postcards may seem a strange public relations device yet that is just what Southwestern Bell Telephone Co. did down in Arkansas. The important thing about this technique is that the telephone company learned the identity of the brickbat throwers, and then had the opportunity of making friends with them.

The post-card canvass was so successful in its first trial throughout the company, completed late in 1956, that a second round is now in progress. This canvass is designed to ferret out customer complaints. When they learned what customers didn't like about service or company policies and practices, action was taken to correct the faults that could be corrected, and to furnish explanations of things which customers do not understand.

In the canvass, a post-card signed by the local manager is mailed to each customer in town, specifically inviting criticisms. A business reply card is attached for the customer's use.

Returned cards containing criticisms are turned over to the proper department for handling. Prompt telephone or personal contacts are made with dissatisfied customers. If the difficulty is mechanical, the trouble is corrected as quickly as possible.

If it is a question of operation or policy, a thorough explanation is furnished. Often, customers are invited for personal tours of the central office to show them what is required to furnish telephone service.

This plan has three principal objectives:

It demonstrates to the customer the company's desire to furnish satisfactory service.

It pinpoints the dissatisfied so that action may be taken to clear up misunderstandings or poor service features.

It provides information for "preventive maintenance" in local public relations, often helping to correct trouble before it happens.

So successful was the first round in the post-card campaign that 92⅔ per cent of the customers who received the cards were satisfied with their service or had their service difficulties corrected. Although customers were told that the telephone company was not asking for compliments, many could not resist telling how much they liked the company.

•

Telephone men will be interested in knowing that the Cook Electric Co. developed and constructed the entire system used for the recovery of the nose cone in the United States ballistic missile. This nose cone was displayed by the President in his White House office during a recent national telecast.

The Cook Electric Co. also developed the system that was used to fire the Jupiter-C rocket from Cape Canaveral, Fla. It has been stated that technical data gained by instruments within the device, still kept secret, will prove most valuable.

•

It is claimed that with the way tuition has gone up in some colleges, education is almost as expensive as ignorance.

•

Spending by all governments—federal, state and local—in the United States is hitting a rate of more than $214,000 a minute and the trend is up, according to Tax Foundation, Inc. The foundation's latest report indicates government spending increasing 6½ times between 1940 and 1956.

The 1940 rate was 2 million dollars an hour. In 1948, it was 6 million dollars. In fiscal year 1956, it was 13 million dollars each hour. In the time it took you to read this, our government spent some $107,000.

•

We were not entirely satisfied with the operation of the oil burning furnace in the Blain household so we started out to improve it.

The oil company keeps the furnace in repair and cleaned and the oil tank filled on a temperature-degree-day basis. We never have run out of oil, but controlling the temperature and humidity was another problem.

Finally, we installed a humidifier that opens when the furnace heats up and provides ample water for evaporation at all times without attention. Next we purchased a day-night clock thermostat that controls the temperature within specified limits at all times. We are now happy and admit that modern controls really perform a wonderful service if one only takes advantage of them.

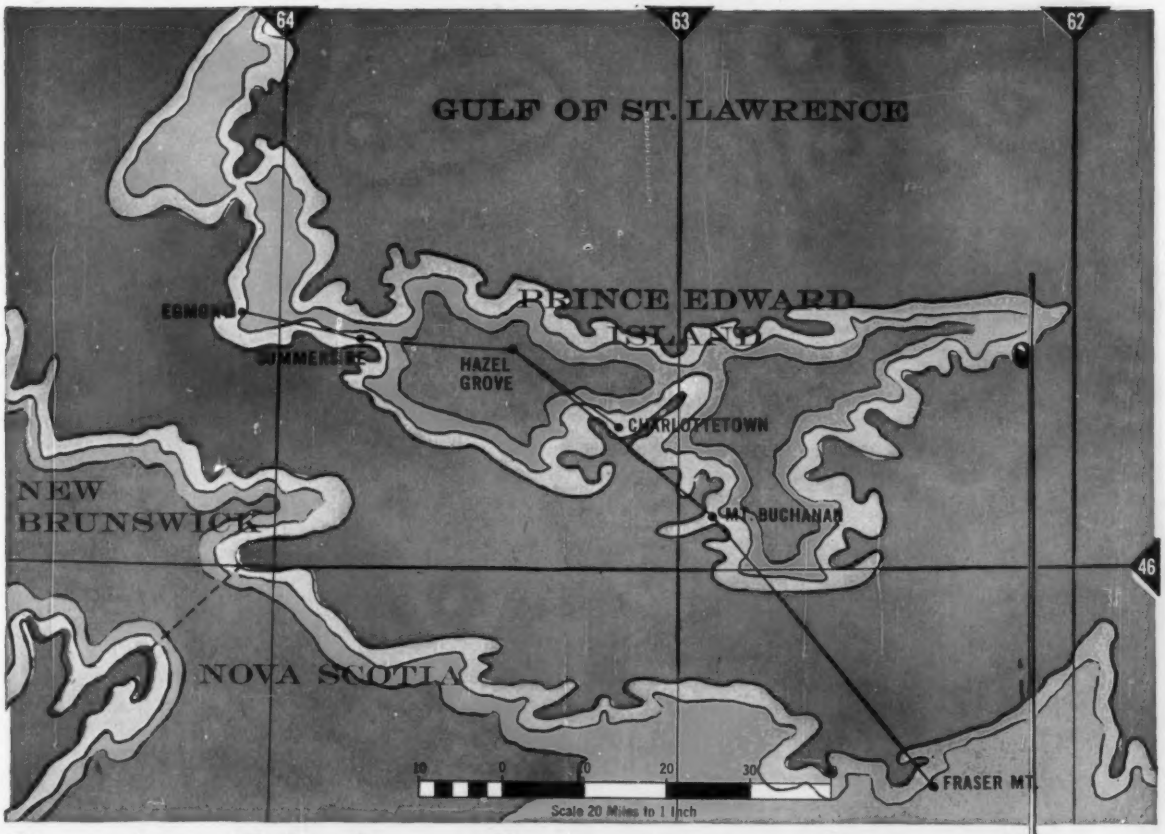
•

It is reported that transatlantic television has come much closer to becoming a reality through the successes achieved recently by tropospheric-scatter propagation. It is claimed that the proposed route can now be covered without a single water-based relay. Furthermore, the longest jump would be a 290-mile stretch between Iceland and the Faeroe Islands.

•

The New Jersey Bell Telephone Co. has recently come up with an excellent idea in a new mobile emergency unit. A standard house trailer, 21½x7½, was factory converted to meet nearly any defense or disaster emergency that might occur anywhere in New Jersey.

The principal equipment is a modified two-position, non-multiple 551B-type switchboard with an ultimate capacity of 160 lines and 30 trunks. This switchboard may be connected to the



Canadian Telephone Companies order Collins Microwave Systems

The Island Telephone Company installs Collins system on Prince Edward Island to replace wire lines, with over-water link to Nova Scotia main land . . . connecting with Collins system owned by Maritime Telegraph & Telephone Limited

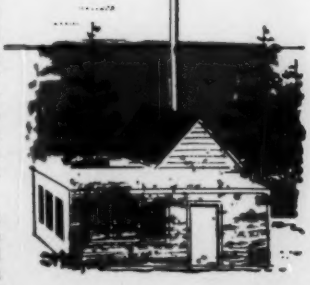
On January 6th 1956, a severe storm and icing condition destroyed virtually all wire-line communications on Prince Edward Island. Replacement costs ran into hundreds of thousands of dollars, with service badly disrupted.

Determined that this should not occur again, Engineers at Maritime Telegraph & Telephone Company Ltd. and The Island Telephone Company Ltd., began to lay plans for a modern microwave installation. Having had extensive previous experience with radio systems of many types, the Engineering personnel were in an excellent position to thoroughly analyze the available systems, and a contract was awarded to Collins Radio of Canada.

Two separate systems are involved, one originating at Fraser's Mountain, Nova Scotia, and terminating at Charlottetown, Prince Edward Island, via two repeaters, the other linking Egmont with Charlottetown via two repeaters.

Unique features include a dual space-diversity overwater path, the transmission of high fidelity multiplex channels for C.B.C. network use and assured circuit continuity through the use of battery-powering and instantaneous hot standby equipment.

These Engineers chose Collins for excellent reasons. Collins Sales Engineers will be pleased to discuss these reasons with you, and to demonstrate the benefits to be derived through the use of these or other Collins quality communications products.



Dual space-diversity overwater path

Collins CREATIVE LEADER IN COMMUNICATION COLLINS

COLLINS RADIO COMPANY, CEDAR RAPIDS, IOWA • DALLAS • BURBANK • NEW YORK • WASHINGTON, D.C. • MIAMI • SEATTLE • COLLINS RADIO COMPANY OF CANADA, LTD., TORONTO • COLLINS RADIO COMPANY OF ENGLAND, LTD., LONDON • COLLINS RADIO INTERNATIONAL C.A., PARIS • TOKYO • MIAMI • CARACAS

nearest available central office. It has been designed and equipped so as to be able to provide emergency service as a replacement for any central office in the state.

The switchboard may be operated with as many as four operators. This is accomplished by operating a "splitting key" to divide each position into two operating sections.

Conversely, during periods of light traffic a single operator can hold down both positions by operating a "grouping key."

A microphone for a public address system is also mounted in the switchboard. It is connected to an outdoor speaker intended for use in summoning nearby persons, as required, thus reducing the number of people who would have to be inside the trailer.

Three separate rooms are contained in the trailer's compact layout. The switchboard is located in the forward room, together with a teletypewriter. This machine is set up for both incoming and outgoing service and it can be connected to either the Newark or Philadelphia TWX switchboards.

The middle compartment is the battery room. Storage batteries are installed to provide power to operate the board in the absence of commercial power or until such power can be connected to the charging equipment. The trailer has its own propane gas-powered generator to provide electricity until commercial power is available.

Four wall telephones are located in the administrative, or rear compartment, with a 12-inch wide writing shelf beneath. This room is intended for use of either the District Defense Committee or supervisory personnel directing the restoration of permanent facilities.

This appears to be an excellent idea and one that could well be copied by other operating telephone companies throughout the country.

•

It has been reported that Russia now has 721,000 engineers with diplomas. Some 80,000 of these were graduated in 1956. They now have 767 higher education establishments with a total enrollment of 2 million students.

Russia also has 2,756 research institutions. They have also scored great advances by opening wide the doors of science to women. There are now 205,000 women engineers in that country.

•

A cautious friend claims that it's better to tighten your belt than to lose your pants.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. Can you please explain the difference between "Alpeth" and "Stalpeth" cable?

A. Alpeth sheath consists of a combination of two components: A low resistance aluminum tape shield applied longitudinally over the cable core; and an extruded, high molecular weight, moisture and weather-resistant polyethylene jacket. Flexibility of large size cables is assured by means of corrugations made in the aluminum tape at the time of application.

Stalpeth sheath consists of three components. The first is a corrugated aluminum shield tape applied longitudinally with the overlap seam continuously soldered. The third and final component is an extruded, high molecular weight, moisture and weather-resistant polyethylene jacket which is bonded to the underlying steel tape by means of a thermoplastic cement.

•

Q. Why is the painting of ladders used in telephone work considered objectionable?

A. Ladders may be, and often are, painted. However, doing this increases their weight and may cover up some defects.

Probably a better plan is to sand the ladders until they are perfectly smooth and then treat them with a good grade of clear varnish.

•

Q. We have experienced considerable difficulty connecting subscribers' loops to rural distribution cable. Can you furnish us with any information as to how this task is best performed?

A. It is suggested that you consider the use of a special terminal designed for this purpose. The cable is extended through the terminal by the use of split grommets. The pairs need not be cut, but are merely bridged with the drop wire at binding posts. Optional pair protection is provided that can be used when required.

Q. Will you please tell us what the advantages are that may be expected from the use of C-rural wire over the conventional type of open wire construction on rural lines?

A. C-rural wire was developed primarily for use on aerial distribution in rural areas and for use in lieu of one or two parts of open wire usually strung on brackets.

Experience has proved that, although its material cost may be slightly higher than open wire, this is generally offset by lower construction costs.

Actually, the cost in place of C-rural wire is about the same as conventional open wire.

The C-rural wire when installed in coastal areas provides better insulation resistance and improved resistance to corrosion. Then, too, when used in wooded areas, tree trimming requirements will be much less than required for open wire lines.

•

Q. When a subscriber's carrier system is used, will it be necessary to make extensive changes in existing central office and station equipment?

A. One five-channel transistorized subscriber's carrier system is designed to function with existing central office and station equipment. This is a stackable system, so designed that any channel or group of channels may be installed or transferred at any time.

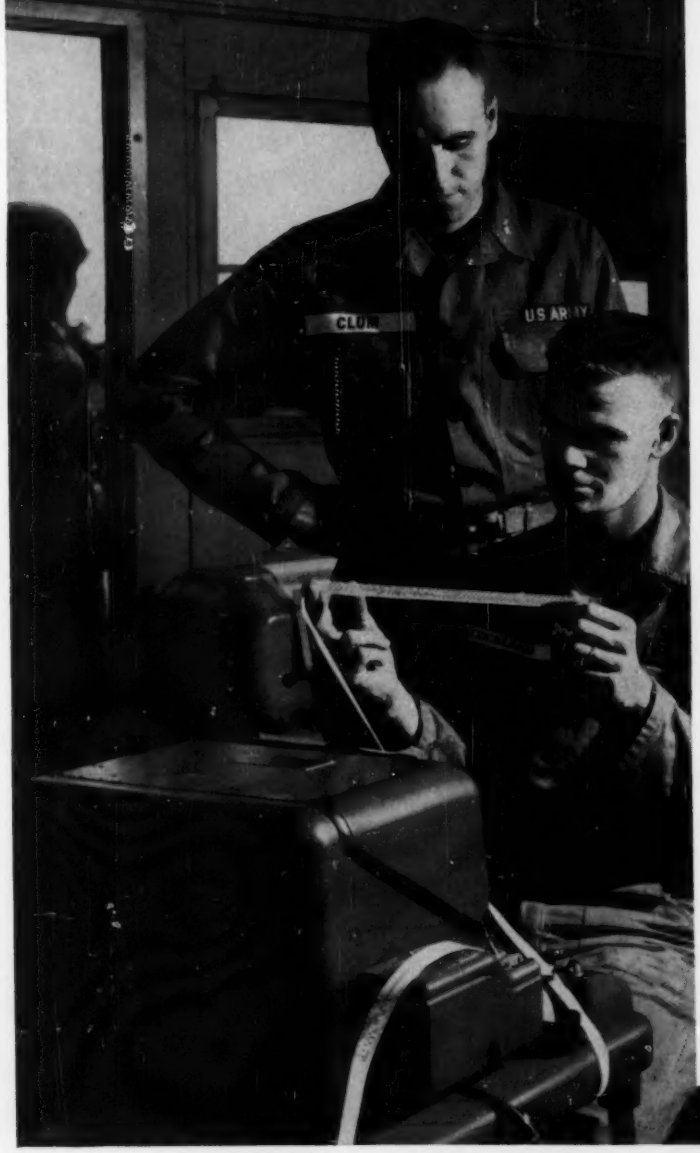
High quality transmission and a reliable ringing and dialing circuit are obtained even with line losses up to 35 db.

•

Q. The ringer on the 500-type telephone has a distinctive sound. Can you explain why this bell sounds different from most other types of instruments?

A. We understand that the pitch of the sound is lower than that of the older ringers, resulting in a more pleasing tone. It is further claimed that the lower tone also is helpful to the many people who suffer a hearing loss in the higher frequencies.

teleprinted messages sent, relayed and received...in seconds!



To coordinate the action of widely-dispersed groups, Kleinschmidt reperforator teletypewriters at communication centers immediately re-transmit printed messages to headquarters, exactly as received from outlying positions.

Reception and transmission of information to higher echelons must proceed smoothly, accurately and quickly. Kleinschmidt reperforator teletypewriters, developed in cooperation with the U. S. Army Signal Corps, save valuable time because the printed message on perforated tape facilitates fast reading... immediate action. The same tape activates the transmitting equipment; the original message reaches its ultimate destination without delay, without change.

The Kleinschmidt equipment of today reflects almost 60 years of engineering and research in the teleprinted communications field. Now this vast fund of technical experience, joined with that of Smith-Corona Inc, points toward new accomplishments in electronic communications for business and industry.

KLEINSCHMIDT LABORATORIES, INC.

PIONEER IN TELEPRINTED COMMUNICATIONS EQUIPMENT

A SUBSIDIARY OF SMITH-CORONA INC • DEERFIELD, ILLINOIS

SIMPLICITY OF DESIGN...

Telephone

Automatic Electric research and design engineers combine their talents to plan the simplest possible construction for Strowger Automatic equipment.

another reason why Men Choose Strowger!

When purchasing central office equipment, the experienced buyer looks for a product that offers *minimum maintenance.* That's why so many telephone men choose Strowger Automatic. You see, Strowger operates on a step-by-step principle and is designed with the simplest possible construction. This keeps adjustments and repairs to a minimum. The position of the switching components permits visual tracing of circuit operation. This speeds your initial training of personnel and makes trouble-shooting quick and easy.

PROVE IT FOR YOURSELF! Visit a Strowger Automatic exchange. You'll see that Strowger offers unsurpassed simplicity in design. You'll also see the craftsmanship and quality construction of this famous equipment. Then get in touch with us. We'll be glad to help you in any way possible. *Write Automatic Electric Sales Corporation, Northlake, Illinois. Or, call Fillmore 5-7111.*

AUTOMATIC ELECTRIC

A member of the General Telephone System – One of America's great communications systems

GENERAL TELEPHONE SYSTEM

The Public and Regulation

By HILLIS TOWNSEND*

EDITOR'S NOTE: The author emphasizes a point which has been stressed by TELEPHONY *in the past—that there is a great need to educate the public as to the duties and responsibilities of regulatory commissions and the fundamentals of public utility regulation and law.*

As Commissioner Townsend says, if the public understood these things, "the entire process of rate-making will be more readily and happily received by people."

As we have stated on previous occasions, while utilities can and should take part in such an educational program, the major responsibility of acquainting the public with the principles of regulation, we believe, naturally falls upon the commissions themselves.

THE SUBJECT of this program is, as you may have observed, as encompassing as the horizon. The 'Problems and Policies of a Public Service Commission," of course, are innumerable. I thought it better, therefor, rather than to attempt to spread out too widely, to select one problem, which to my mind is important, and discuss that one in some detail.

Before even stating what I believe to be the problem, I would like to discuss for just a moment two phenomena that have taken place in our country; one during the past 15 to 17 years, and the other one having occurred within the past 25 years.

The first one is the phenomenon of inflation. All of us, both in public utility commission work and in work for the utilities, have struggled with that problem and read a great deal about it. In the current issue of *The Harvard Business Review*, there is a very illuminating article in which the author took a rather distinct departure from all of the other writers whom I have read and who had discussed the subject. He analyzed two previous articles concerning inflation that had been printed previously in *The Harvard Business Review*, and sought to show that everything those authors had said previously about inflation was not as bad as they had portrayed it to be.

He went on to point out that the groups of people who are supposed to have been hurt by inflation are smaller than were at first suspected and that they had not been as badly hurt as most writers portray. He also sought to allay the fear, which is often expressed, that the creeping inflation that we have had over these years will inevitably develop into a galloping inflation.

Most writers, as you recall, have been of the opinion that that sort of thing is inevitable, and that this creeping inflation will one day develop into a galloping inflation with its devastating effect upon the monetary and economic system of the country.

This author said, "That isn't necessarily true," and went on to point out why that would not occur. Reading it was quite consoling. He described this inflationary trend that we have had during the past, since 1940, we will say, as a sort of unavoidable concomitant of the prosperity we have had during that period, and he did a fair job of showing that without this creeping inflation we would not have had this era of prosperity through which we have passed.

Now, I am not championing his discussion and I simply mention it because it gave an entirely new slant on this thing that has been so troublesome in recent years and with which commissions have had to deal.

The other phenomenon that has taken place in our country over the past 25 years has been, as those of us who have lived through it have observed, the new position that government has assumed in attempting to solve many of the economic and social problems of the people which, before that time, were regarded as non-governmental functions, and which were either solved by the people themselves or left unsolved.

You will recall that it has been only within the past 25 years that we have had such things as social security, unemployment benefits old-age pensions, numerous kinds of bonuses and benefits from the government, together with the innumerable subsidies that the government has provided for various industries and occupations. As a result of that, I think the people have come to look toward the government more and more for a solution to some of the economic and social problems that previously were not considered a government function.

Now, it is against the backdrop of those two developments that the public views the function and operation of a public service commission, or, to state it another way, it is through the haze created by those developments that the public, and the ratepayers, observe the function of a public service commission.

I don't think the purpose and function of a public service commission is properly understood by the average ratepayer, or the public, we will say, in the light of those developments. I think that many ratepayers and mem-

*Mr. Townsend is a member of the West Virginia Public Service Commission. He gave this address at the recent annual convention of the Great Lakes Conference of Railroad and Utilities Commissioners at White Sulphur Springs, W. Va.

bers of the public feel that the duty and purpose of the public service commission is to control the forces that require rate adjustments rather than to adjust rates to conform to changing economic requirements.

While the two phenomena I mentioned have taken place in the country, the law under which utility rates are made and utilities are regulated, and the procedure that is followed in enforcing or administering that law, has not changed very much.

In our state, the statute law is very brief concerning the regulation of rates. Our statute says that the rates shall be no more than the service is reasonably worth, considering the cost thereof. That one sentence is just about all of the statute law we have on the subject. Of course, we have the case law which provides, on the other hand, that a utility has the right to earn a fair rate of return on a fair valuation of its investment and the commission, of course, is bound to operate in recognition of that requirement of law, as well.

The procedure that is followed in making rates, which in our state is well settled and has been for many years, is the rate base method, with which we are all familiar, and more recently the operating ratio method sometimes used for carriers. Now, I think—and this is the problem that I want to point up and invite you to think about—that the ratepayers have far too little or far too hazy a notion of the function and duty of the public service commission. It has been my observation that many members of the public, many ratepayers, have a very hazy notion of the law pertaining to regulation and of the procedure that is followed in enforcing the law. I believe that if these notions could be cleared up, the work of the public service commissions would be better appreciated and the problems of the public utilities would be greatly alleviated.

In a recent case which our commission had, and in which I wrote a report, I took into account this question as a sort of experiment, and as a part of the report, I set forth in narrative form the elementary requirements of law respecting the regulation of utilities in as simple language as I could. I told what the requirements of the law were, and then went further and set forth the procedure that was followed in attempting to arrive at proper rates for the utility.

In order to give still further explanation—this was all before we got into the merits of the case—I set forth some rather basic facts that I thought were sometimes overlooked, among which were that the public utility was a privately-owned and operated business enterprise, that it provided its own capital, enjoyed no government financial assistance, that it purchased its materials in the open market at competitive prices, and paid its labor at prevailing wage rates. I also noted that the utility was a taxpayer the same as any other taxpayer, and being in a high bracket for income tax purposes, that for every dollar net revenue we allowed, we had to give more than $2.00, the extra dollar going to the government in taxes.

I was very gratified at the result had from noting those things in the report. Everything I said was elementary. They were all things that are elementary to you people who work for utilities and to those of us who are associated with public utility regulation, but I had a feeling they were things that might well be said because of the suspicion I had that everybody doesn't know these things as they should.

A newspaper reporter came in my office shortly afterwards and told me that he had read my report and his face was very bright, and he complimented me on it, and it seems as though a considerable fog had been removed from his mind as to the duty and procedure of the public service commission. I was also complimented to have him tell me that they had filed my report in the newspaper office as a permanent reference for the elementary principles of public utility law and public utility rate-making.

I think if more of that was done the success of the commissions and of the system we have of regulating public utilities would be considerably enhanced.

How it can be done is, of course, a problem. The utility, I believe, can be a little more forward in asserting its rights under the public utility law. There is nothing for utilities, to my mind, to apologize about if their revenues are not sufficient to give a fair return on their investment. They have to produce a profit the same as any other business. It might help some if in the course of major rate cases they would mention more of the simple fact that a utility is a privately-owned and operated business enterprise, in most respects the same as a non-utility business, and that it is not guaranteed a profit by the state. Also, the rights of the utility under the law, simply stated, should be made clear, as well as the duties and limits of the regulating authority. These simple things are frequently obscured by the complexities of a rate case.

The whole procedure of rate-making, and the law, too, has become too esoteric, as is well known to those of this group, and I think we lose sight of the fact that the fundamentals, which are themselves comparatively simple, are little known to the people who pay the rates.

Now, if those things are made clear, I think the entire process of rate-making will be more readily and happily received by the people. In this inflationary period, of course, it has been necessary for utilities to raise their rates in many instances. Although commodity rates have risen gradually but steadily, we know that because of the regulatory lag, utility rates may remain the same for three or four years and then suddenly jump. Utility rates cannot creep, as commodity prices, but must move upward in steps in order for the utility to keep abreast of the shrinking value of the dollar.

The impact of utility rates being increased 10, 12, or 15 per cent at a time is always greater than the impact of the rise in commodities, because, as I say, commodity prices, as we all know and as we have seen, rise gradually. But, then, when there is a sudden and distinct increase in utility rates, there is a strong emotional reaction to it by the ratepayer, sort of the straw that breaks the camel's back, and the ratepayer, not fully aware of exactly what has caused that and how that comes about, is attempted to unleash his emotions on the governor of the state or the public service commission. The letters that come in almost always indicate that the person complaining doesn't have a complete understanding of the way rates are made.

If ratepayers and the public should have a fuller and more complete understanding of the law of rate-making and the methods of making rates, I think it would lessen the thing we see occasionally of some ambitious politician singling out the utilities or the public service commission as a target in the furtherance of his political ambitions.

That sort of person exploits the people's lack of complete information on the subject, and exploits, further, the emotions they have towards the increases in rates. Your utilities operate in the free enterprise system — the profit system that we know—and that is something that I think is not completely understood.

It is a vague, nebulous notion among a lot of people that public utility services are, in some way, remotely the

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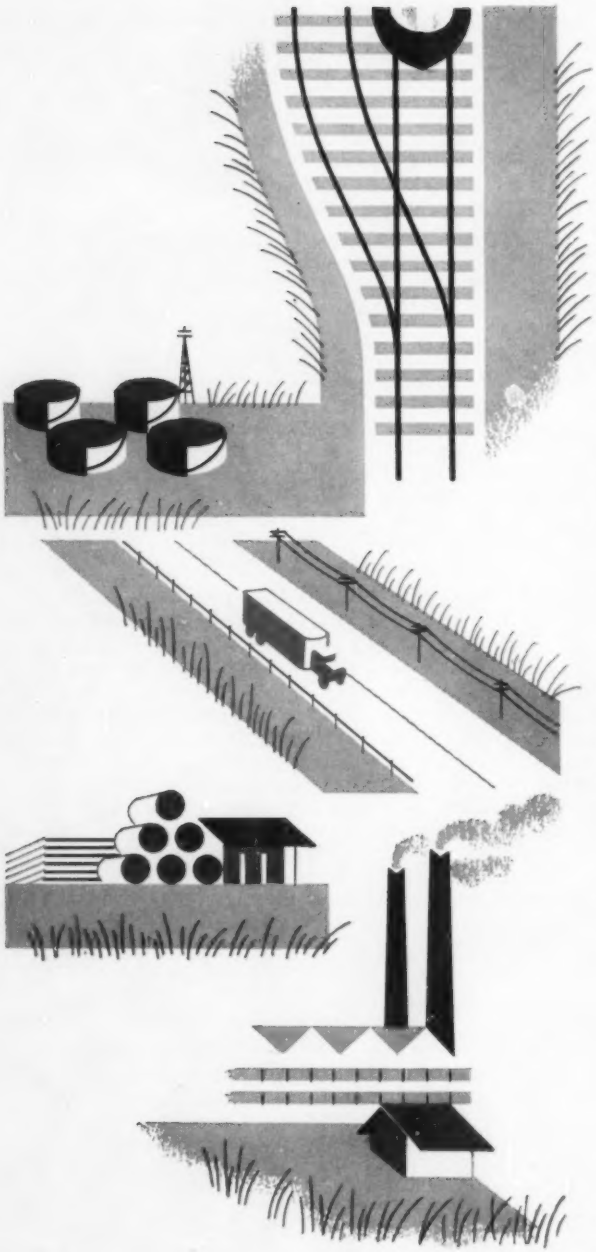

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a new pre-emergence herbicide

Now available for long residual control of grassy and broadleaf weeds in driveways, roadways, railroads, walks, paths, industrial sites, around buildings and other non-cropped areas.

NOW YOU CAN STOP WEEDS BEFORE THEY START with Geigy's amazing new pre-emergence herbicide Simazin 50W. Think what *preventive* weed control with Simazin 50W can mean in terms of time and money saved for industries, municipalities, highway commissions, railroads, utilities and any other business or service concerned with the problem of weed control on non-cropped areas.

How Simazin 50W Acts

Simazin 50W, a triazine compound, is not a contact or foliage herbicide, but acts on the plant roots, and should be applied just before germination or emergence for best results. Before using Simazin 50W for long residual weed control, existing plant growth should first be removed by use of a contact herbicide, or by mowing or ploughing under.

Long-Residual, Economical

One pre-emergence application of Simazin 50W applied at the rate of 10 lbs. per acre controls most grassy and broadleaf weeds for about a year. The material is economical and easy to use. At the maximum rate of application, less than ½ lb. is required to treat 1,000 sq. ft.

Controls a Variety of Weeds

Simazin 50W controls a wide variety of grasses and broadleaf weeds including barnyard grass, witch grass, yellow foxtail, wild oats, crabgrass, broadleaf plantain, dandelion, lamb's quarters, pigweed, ragweed, nightshade, purslane, velvetleaf and mustard.

Low Toxicity, Non-Corrosive

Simazin 50W has very low toxicity to humans and domestic animals. It is non-corrosive and can be removed from spraying equipment by merely flushing thoroughly with water.

No Lateral Leaching

Since there is practically no lateral leaching, Simazin 50W can be used adjacent to crop land and ornamental areas. Lack of phytotoxicity to foliage minimizes drift hazard.

Availability

Geigy Simazin 50W, containing 50% active ingredient is available in cases of 10 x 5 lb. bags and 50 lb. fiber drums.

Free Technical Bulletin

Send for your free copy of the Simazin Technical Bulletin and descriptive pamphlet. Address Department T-18.

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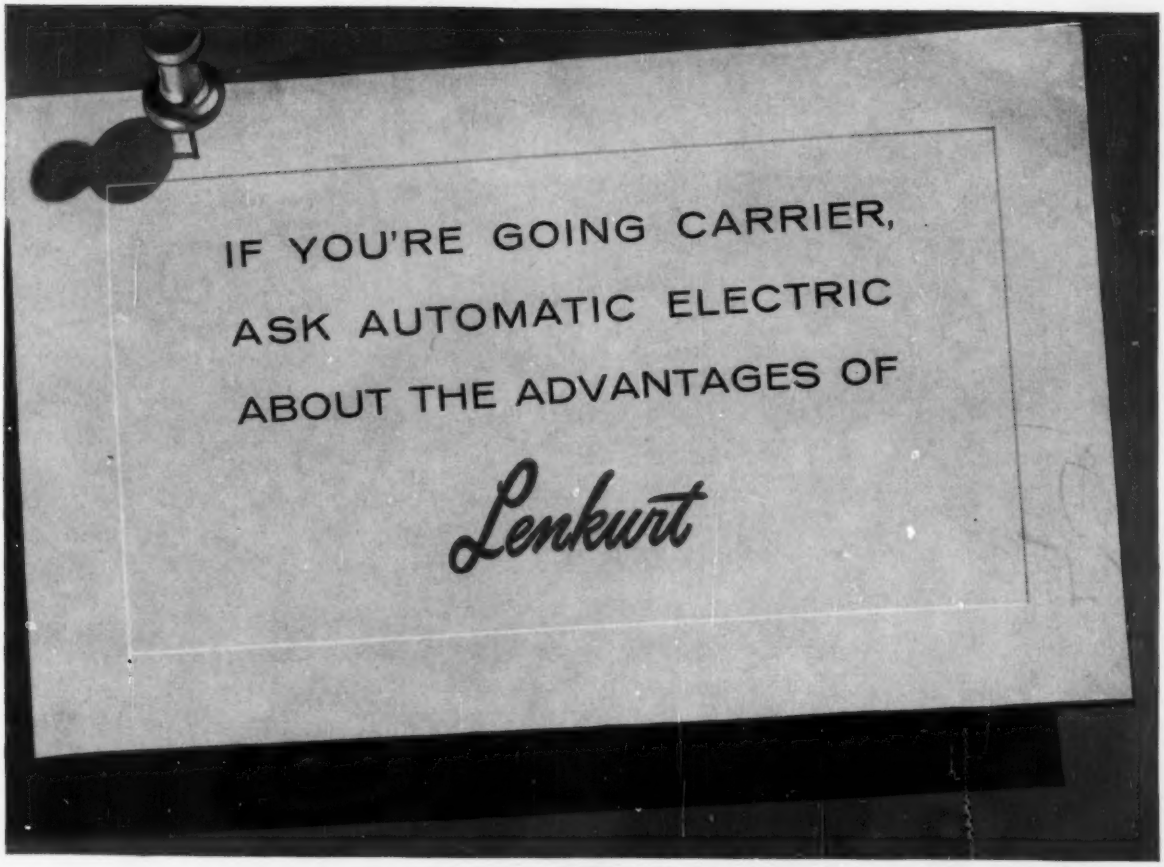

. . . **BECAUSE** Lenkurt Carrier is the simplest, fastest, most economical way to add profitable new circuits, using present wires. Only with Lenkurt Carrier do you benefit from advanced engineering features like these: direct interconnection at carrier frequencies . . . exclusive "building-blocks" concept of interchangeable, plug-in components . . . utmost simplicity of installation, maintenance and expansion.

. . . **BECAUSE** Automatic Electric offers you Lenkurt Carrier in one complete package—engineered, furnished and installed. We take complete responsibility until your system is operating smoothly.

. . . **AND BECAUSE** Lenkurt Carrier Systems are engineered *by* telephone men *for* telephone company operations.

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GENERAL TELEPHONE SYSTEM

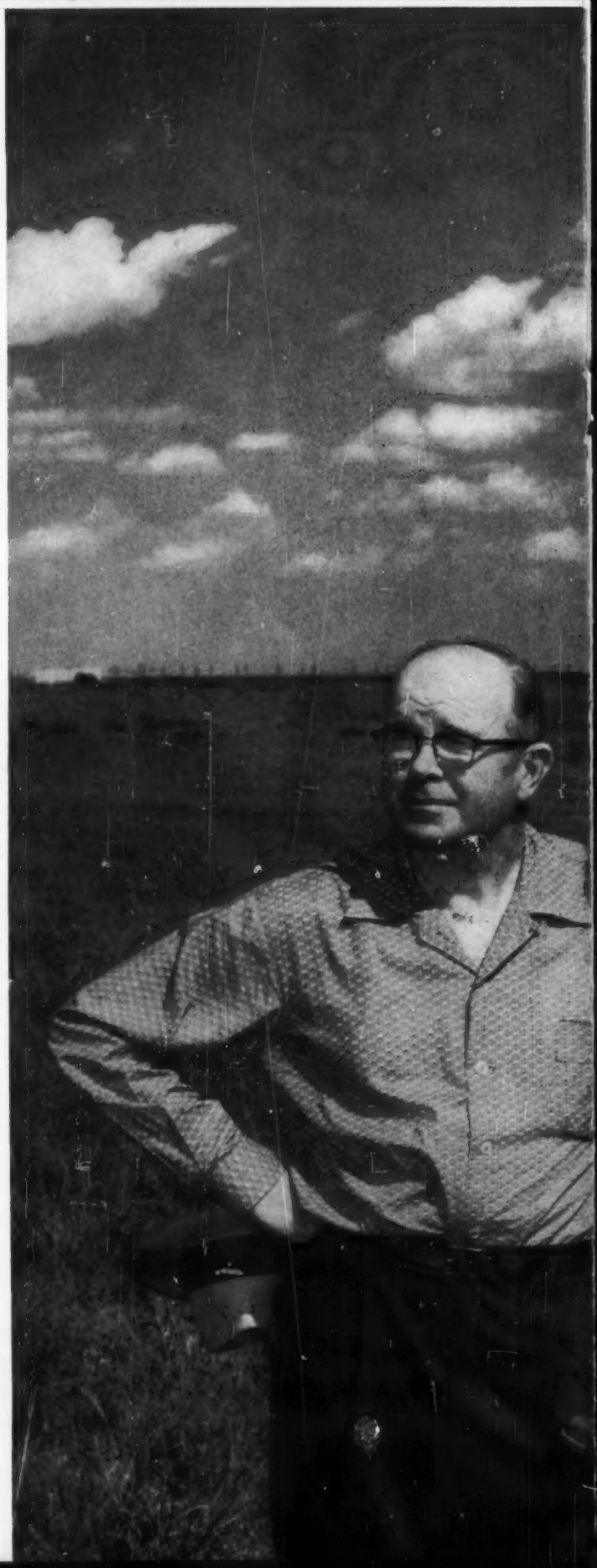
Rural telephone service means working together

Good rural service is the result of telephone companies working together, and telephone people working with their customers.

It's important that farm families understand how this co-operation is producing better and more valuable telephone service for them.

That's a job that advertising can help with. A series of Bell advertisements addressed to farm families about their telephone service is running in eleven nationally circulated magazines reaching farmers.

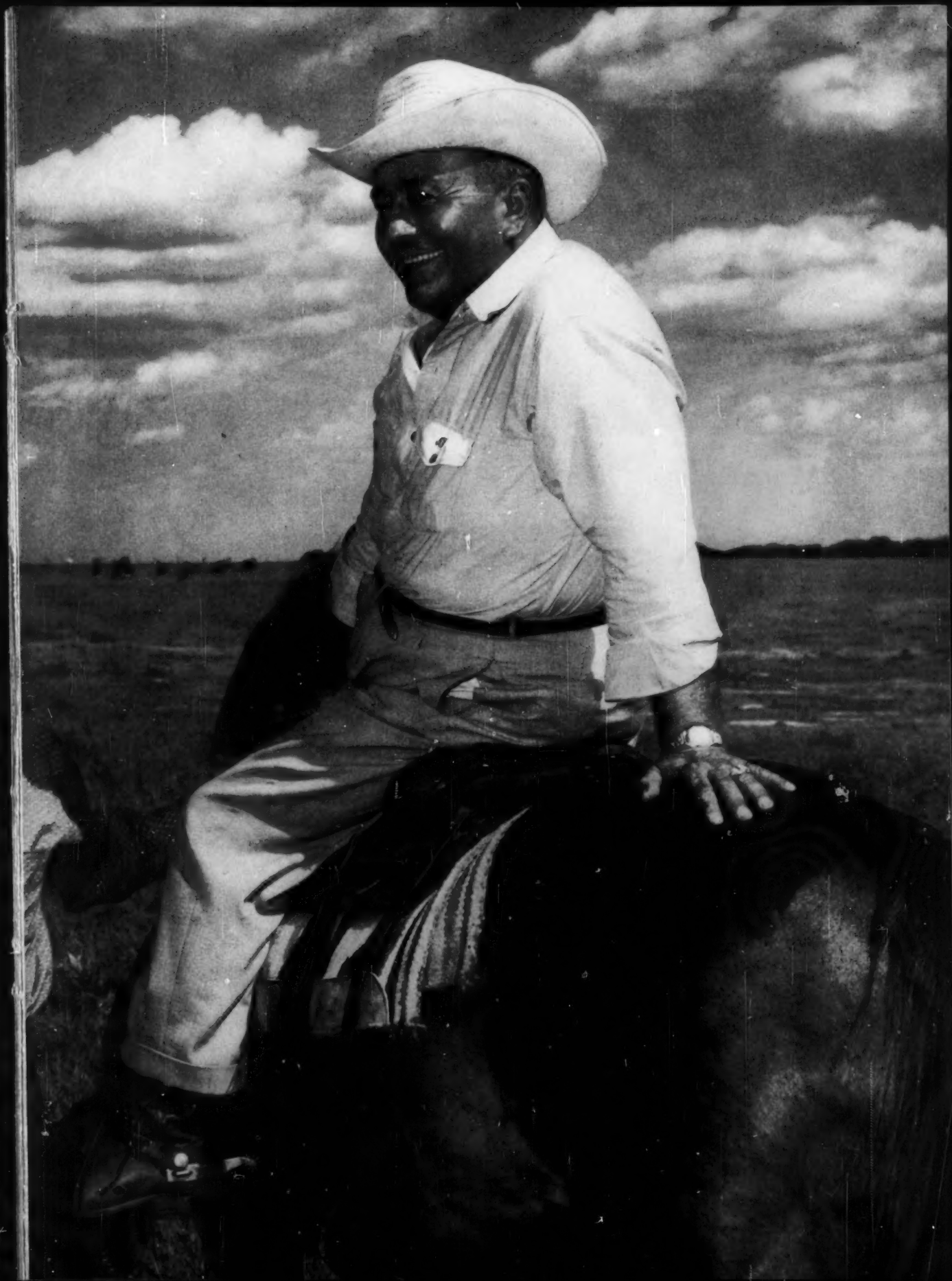
This advertising gives people in rural communities a picture of what is being done for their telephone service, and their telephone neighbors who are doing it.

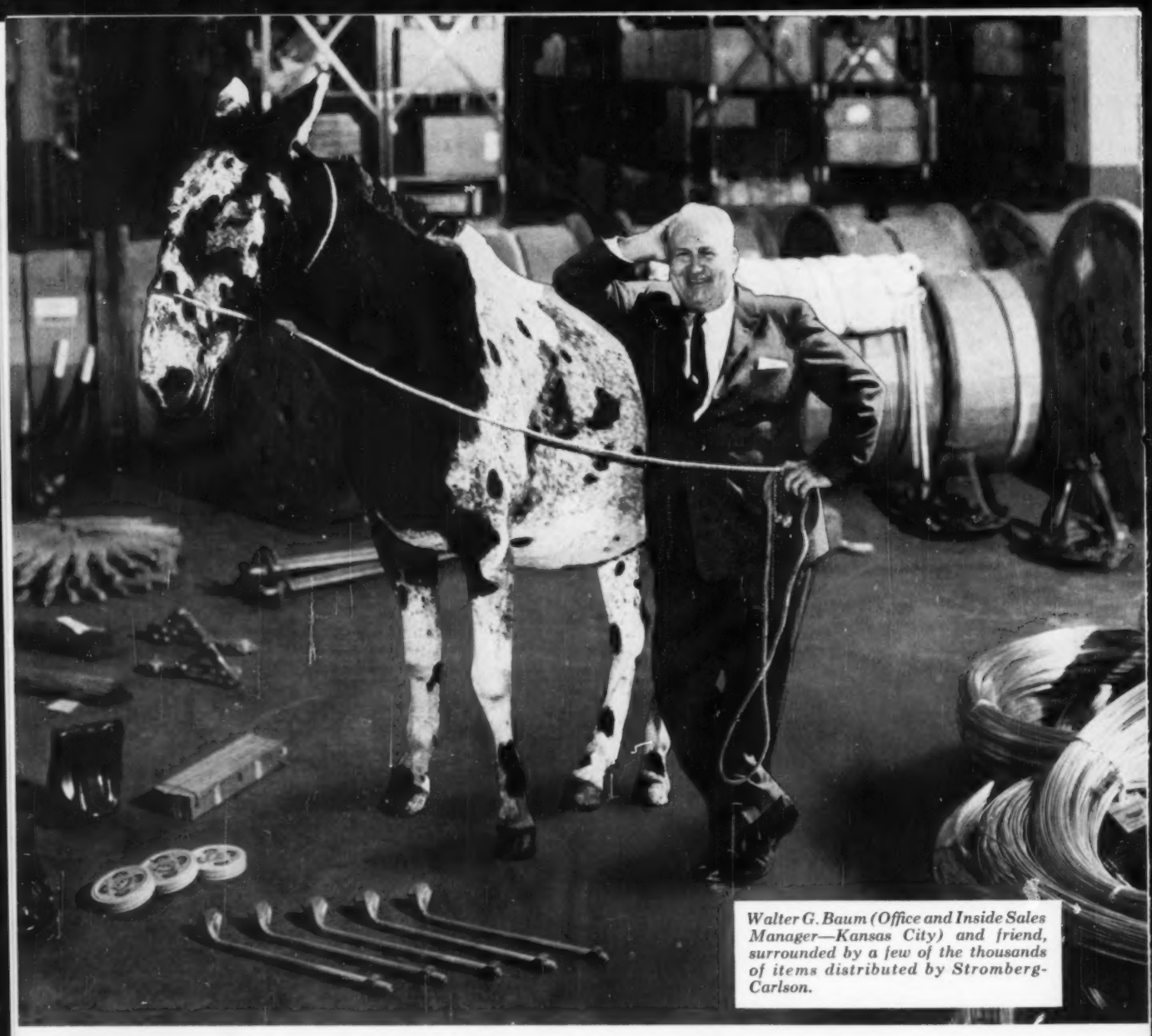


Joe Tucker (right), Oklahoma cowman, talks over his service with Dick Hildebrand, District Manager in Bartlesville, Okla.

Working together to bring people together

BELL TELEPHONE SYSTEM





Walter G. Baum (Office and Inside Sales Manager—Kansas City) and friend, surrounded by a few of the thousands of items distributed by Stromberg-Carlson.

"In Missouri, even Jenny was convinced!"

The rumors you may have heard about people and animals in this part of the country are grossly exaggerated.

There's a vast difference between a healthy "show-me" attitude and the sheer stubbornness attributed to our good friends, human and animal, by idle rumor-mongers.

Actually, it's easy to convince Missourian telephone people (and others all over the U. S.) that it pays to buy construction and maintenance supplies distributed by Stromberg-Carlson.

We simply *show* them (in Missouri and elsewhere) that these products offer 3 important benefits:

- the guarantee of the manufacturer
- the guarantee of Stromberg-Carlson, backed by 62 years of leadership in telecommunications
- a good slice of what we earn from your supply orders supports our research and development in products designed to reduce your operating costs and increase your revenue.

For instance: refinements in XY® CDO equipment, especially the money-saving, easy-maintenance features . . . toll ticketing (this one took 2½ years of research) . . . subscriber PX switchboard systems like our revenue-boosting 2-10 and 4-20 . . . the 6K-1 "fingertip" PBX, which pays the greatest return on the dollar of any product in the industry. *Your purchases of supplies help make developments like these possible.*

Whether or not you're from Missouri, we'd welcome an opportunity to show you how we can meet your supply needs.

"There is nothing finer than a Stromberg-Carlson"

S-C

STROMBERG-CARLSON

A DIVISION OF GENERAL DYNAMICS CORPORATION

SALES OFFICES: Atlanta 6, Chicago 6, Kansas City 6, Rochester 3, San Francisco

GD

The Gift of the New Year

By MAYME WORKMAN

"Our path is where we make it—
In the new year as in untrodden snow."

THE New Year always opens a new period of fresh hope, optimism and determination by all of us to do better and greater things.

Individually we make resolutions, some of which are faithfully kept—others crumble in the dust within a short time. Keeping resolutions for a whole year is somewhat beyond the capacity of most of us. But, if we concentrate on them for a day at a time then we've solved the problem of living up to them. We should renew them each day just for the day—then they will become much simpler—much easier to keep.

Time moves on in its even flow regardless of clocks and solar systems. As Lord Tennyson wrote in "In Memoriam:"

"Our little systems have their day; they have their day and cease to be; they are but broken lights of Thee, and Thou, O Lord, art more than they."

Human life is in this flow of timeless existence. Yesterday, today and tomorrow are words that help us in our clock-conceived spacing of events. We are immersed in the presence of God, either to do or refuse to do His will.

There is a tremendous value, however, in our solar time schedule. From it we have the months and the seasons, daylight and dark, and the routine of daily affairs.

Our time is to be used wisely, honestly, helpfully. We pass a given point but once. It will never recur.

A virtue which will make our new year happier, on the job as well as off the job, is a sense of appreciation—gratitude for favors received. This applies to little things as well as to big things. It doesn't require much effort to say, "I sincerely appreciate what you have done for me and I thank you for it."

Speaking of appreciation reminds me of a story I heard of a young man who was organist in one of the principal churches of a large city. He is a fine musician, but being blind, was unable to read in the faces of his audience the great pleasure his music was giving. He is master of the organ. His caressing touch on the keyboard sent out through its great pipes the songs of the soul. People would talk to one another about the beauty of his harmonies and the uplifting influence of his symphonies. Often the sweetness of the music sent tears down furrowed cheeks. But alas! they never thought to tell the young organist. They did not know for what his heart was longing.

One morning it was announced that he would play no more after the service; that his decision was final, and another organist must be secured. After the service a woman who had enjoyed all of his music thoroughly went up to him, and said, very earnestly: "I am sorry you will not play for us longer. I have enjoyed your music so much. It helped me greatly. It soothed and comforted me when I sorrowed. I have thought many times that I would tell you what an inspiration I have received through your music. I thank you for it."

The young man's voice faltered, and the tears rushed to his sightless eyes, as he whispered: "Oh, why didn't you tell me sooner? I, too, needed comfort and inspiration."

A sense of appreciation and a friendly attitude are priceless virtues, especially in the central office. They can be cultivated in contacts with customers and fellow workers. If each individual would resolve to be a little more friendly and thoughtful, to smile at one another as well as to put a smile into their voice when speaking to customers, the atmosphere in the central office would be a happy one. The day would pass more pleasantly and this same friendly feeling would probably be taken home to family and friends.

After all, life is what we make it and a little appreciation and politeness helps to make the journey more pleasant. A guest at a dinner given in honor of Marshal Foch in Denver, Colorado, said that there was nothing but wind in French politeness. Marshal Foch retorted: "Neither is there anything but wind in a pneumatic tire, yet it eases wonderfully the jolts along life's highway."

MY NEW YEAR'S WISH

God bless your home and all therein;
God bless you well, day out, day in;
God make His love a light that cheers
Through all the days
Through all the years.
God grant you vision when clouds rise
To see His rainbow in your skies;
And may God give in all you do
The gift of happiness to you.

"We're convinced about Kennecott Cable"

We're quite mulish in our conviction that Kennecott gives you the 3 qualities you need most in telephone cable: *uniformity, dependability, lasting service.*

Before leaving the factory, every inch of cable is thoroughly tested for dielectric strength, insulation resistance, capacitance and fixed dimensions.

This kind of thorough-going "show-me" testing is your assurance of economical, trouble-free operation in the field.

Want to be shown yourself? Next time you need telephone cable, specify Kennecott, distributed by Stromberg-Carlson.

STROMBERG-CARLSON

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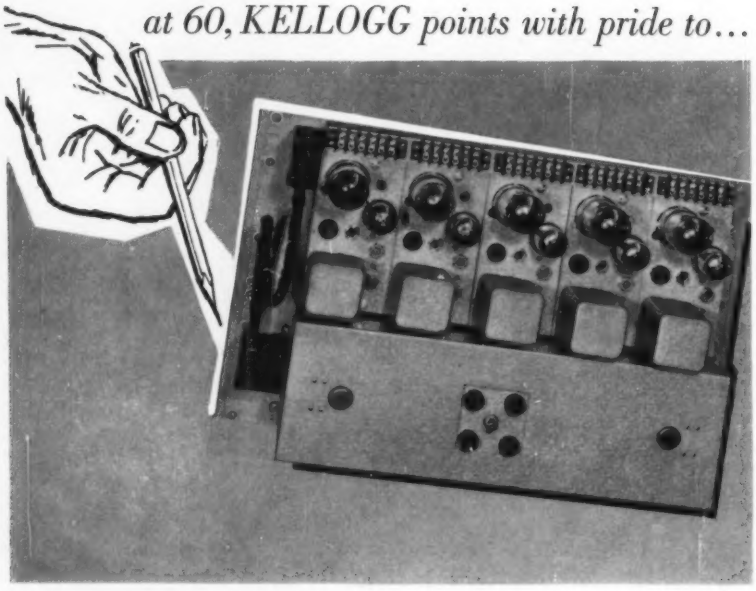
SALES OFFICES: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

at 60, KELLOGG points with pride to...



AN ELECTRONIC RINGING GENERATOR THAT ELIMINATES CROSS-RING PROBLEMS

KELLOGG ELECTRONIC RINGING GENERATOR . . . Less maintenance . . . No moving parts . . . No contacts to clean or replace. Plug-in components . . . Not damaged by shorted lines . . . Experience proves tube life normally exceeds 18 months. No Cross-Ring problems . . . Extreme frequency stability . . . precise, easily adjustable frequencies. Flexibility . . . provides any combination of 5 or fewer ringing frequencies. All ringing frequencies are independent of each other and/or frequency of power source. Efficient . . . all frequencies continuously available . . . furnishes enough power for 1000 or more lines. Compact . . . mounts on standard 19″ relay rack . . . requires only 12¼″ of vertical space.

KELLOGG
A DIVISION OF I T & T

KELLOGG SWITCHBOARD & SUPPLY COMPANY
A Division of International Telephone and Telegraph Corporation
6650 S. Cicero Ave., Chicago 38, Ill.
Phone: POrtsmouth 7-6900

IN THE NATION'S CAPITAL

Continued from page 20

over REA's insistence that there should be competitive bidding on central office equipment. A number of telephone company borrowers prefer to buy equipment from manufacturers and otherwise make their own arrangements on a negotiated basis. The REA staff, however, has inherited a policy from its rural electrification practice of insisting on competitive bidding.

Last spring the REA telephone advisory committee recommended that the REA take another look at its competitive bidding policy. In its meeting last month this recommendation was repeated. The committee pointed out that even if the borrower on a REA loan is given the choice of either negotiating a purchase or buying on a competitive bidding basis, REA would still have the right to put the final OK on the deal. So far, however, about the only thing that the REA staff has been able to say about this is that individual cases may be judged on their own merits.

REA Administrator David Hamil did have one other important statement to make about the minimum general standard of gauging efficient rural telephone operations. It used to be that 500 stations was the yardstick. Anything below that was considered, or at least suspected, of being uneconomic. But with increasing costs and operating complications in the telephone field over the past few years, REA has had to increase the minimum yardstick to 1,000 stations. The administrator stressed that this was only a rough gauge, and that conceivably particular companies of less than 1,000 stations might operate under circumstances which would justify a smaller system. But, on the whole, REA is now likely to consider less than 1,000 stations as subject to careful scrutiny from the standpoint of economic and efficient operations.

What happens when telephone companies find themselves smaller than the suggested minimum? The advisory group indicated that agreement should then be sought, where possible, for consolidation of small telephone properties into more practical operating units. This reduces management expense and other overhead per station and improves the loan security as far as REA is concerned.

Neither REA nor the advisory committee had anything new to contribute on the controversial question of boosting the 2 per cent rate on REA loans. Administrator Hamil said that REA often has a problem trying to figure

out workable loan arrangements even at the 2 per cent rate. It is likely that REA will not take an official stand on this until it has to, or at least until the position of the Eisenhower admininstration is made clear, which should be later this month when the budget message goes over to Congress.

Missouri to Fair Value

Missouri is the latest state to swing away from a strict original cost base favored by its state regulatory commission. The Supreme Court of Missouri has handed down a unanimous opinion having the effect of directing the state public service commission to revise its rate-making formula by taking current inflationary trends into consideration in establishing valuations. The high state court reversed and remanded a lower court which had upheld the commission's order granting only about 60 per cent of a rate increase requested by the Missouri Water Co. serving Independence.

In his opinion, Judge Hollingsworth wrote:

"The decreased purchasing power of the American dollar, especially since the close of World War II, is a matter of common knowledge to owners and users of property and consumer goods and services. Courts also know these facts and give such consideration to them as, in justice, they should."

The court did not lay down any specific formula for the commission to follow, but Judge Hollingsworth pointed out that in the Independence case the commission had excluded from consideration the evidence relating to the company's present fair value.

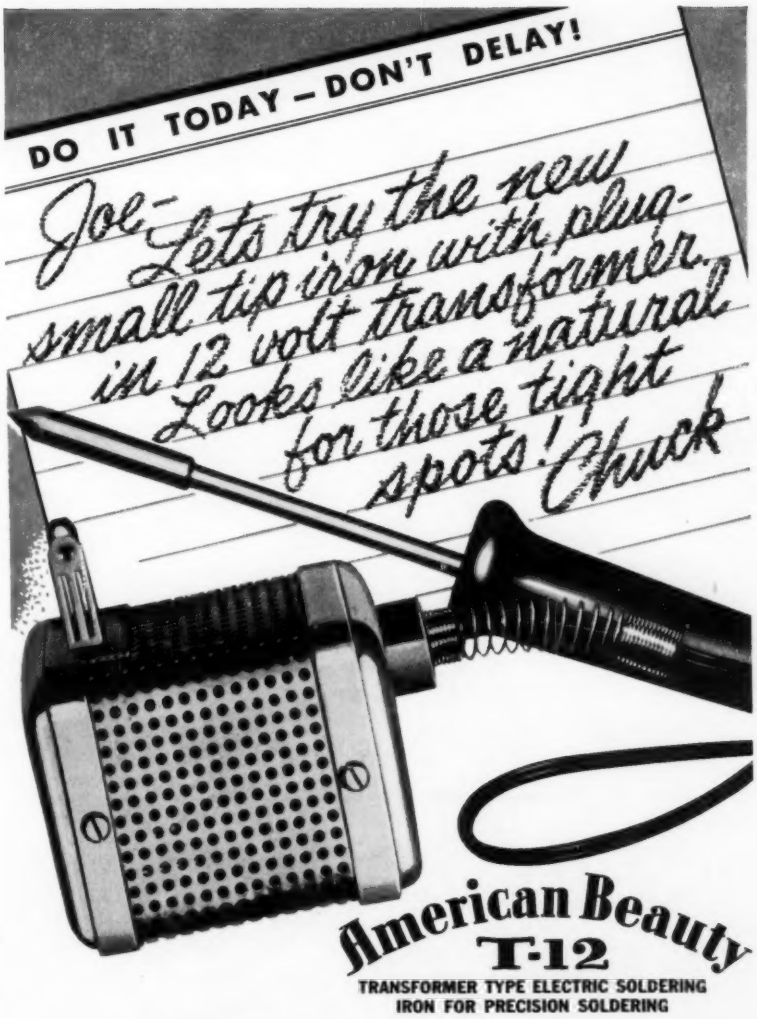
The opinion said that a fair value should not be based primarily on either original cost of the property or the cost of reproducing it new. It said courts should not circumscribe regulatory agencies by hard and fast formulas, but that each case should be determined on its own facts and merits.

REA LOAN ALLOCATIONS

Continued from page 21

This new borrower plans to provide facilities to serve 540 farm families now without telephones, to improve service for 898 present subscribers now receiving magneto service from the Arrow Telephone Co.

The borrower's present system consists of automatic exchanges at Hallett, Jennings, Keystone, Mannford and Osage. It plans to acquire the Arrow company at Maramec, furnishing magneto and common battery service through the Maramec, Skedee and Blackburn central offices.


DO IT TODAY – DON'T DELAY!
Joe- Lets try the new small tip iron with plug- in 12 volt transformer. Looks like a natural for those tight spots! Chuck

American Beauty T-12

TRANSFORMER TYPE ELECTRIC SOLDERING IRON FOR PRECISION SOLDERING

T-12 has its own 12-volt transformer that plugs into any 110-volt outlet. Quick, ample heat at the tip of this ultra-slim, pencil type iron for dependable, precision soldering on delicate or miniature electrical components. Super-flexible,7-foot cord. Cool, comfortable handle, made of high-impact thermo-setting material. One-piece tip-elements—1/16", 1/8" and 1/4" tip diameters—interchangeable, made of stainless steel and Armco ingot iron, permanently tinned. 17 or 20 watts input.

Low voltage means extra long tip-element life and complete safety. Model T-12 will give a lifetime of service.

Try this NEWEST addition to the American Beauty line—the complete line that has a correct wattage, tip-size, and model for every job.

AMERICAN ELECTRICAL HEATER COMPANY

American Beauty ELECTRIC IRONS SINCE 1894

163-H **DETROIT 2, MICHIGAN**

TAKE A BIG STEP TOWARD SAFETY WITH DUO-SAFETY LADDERS

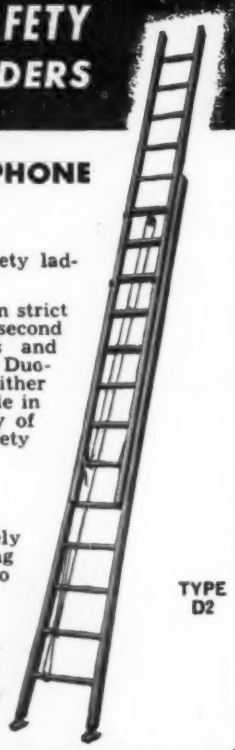
... CUSTOM DESIGNED FOR TELEPHONE MAINTENANCE WORK!

Here's one fine example of the many Duo-Safety ladders ideal for telephone maintenance work.

Type D — a truly great extension ladder built in strict accordance with safety regulations. Rungs are second growth hickory, reinforced with steel rods and equipped with special automatic locks and Duo-Safety's famous Safety Shoes. Made with either straight or parallel side rails, Type D is available in one, two or three sections — in a large variety of sizes. Write for free catalog on all Duo-Safety ladders.

IMMEDIATE DELIVERIES!

Duo-Safety ladders will be shipped immediately upon receipt of order! A planned stock-piling program assures really fast action — there's no delay the Duo-Safety way!



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809 Ninth Street • Oshkosh, Wisconsin

TRANSLUCENT WATERPROOF

Aerial Tents • Guard Covers

Better Than Canvas
Lightweight, won't rot or freeze.

Intensify Daylight
Ideal for splicing in any weather.

Safety Fabricated
Resists burning. Tough Bakelite "KRENE" has Dielectric resistance of 9,600 to 16,000 volts.

1-Piece Guard Cover
weighs only 9 lbs. Front-and-top flap opens for easy entry . . . raise and snap-secure for ventilation.
Fits Bell System frames. Washes easily.

One and Two-man Sizes
U. S. Pat. 2809649

USERS of Plastimayd Safety Products:
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Write for Bulletin T1

PLASTIMAYD® PRODUCTS CORPORATION
PORTLAND 14, OREGON

PLASTIMAYD TARPS AND RAINWEAR FOR SAFETY AND PROTECTION

Automatic facilities will replace the three Arrow switchboards, and a new automatic exchange will be added at Naval Reserve, north of the Blackburn area. The five existing automatic exchanges will be retained in place in the enlarged system.

The completed system will serve 1,438 subscribers through nine automatic exchanges.

The proposed use of a portion of these loan funds for expansion of facilities to serve 204 new subscribers and to improve service for 432 existing subscribers in the Keystone, Mannford and Osage exchanges will be postponed until construction of the Keystone Dam and Reservoir is completed.

Joe E. Trower is president and manager of the Cimarron Telephone Co.

•

Chapman Lake Telephone Co., Jermyn, Pa.; $250,000 (Dec. 13).

The new borrower plans to improve service for its 329 existing subscribers, and to furnish initial service for 190 farm and other rural subscribers in its area. At present the company provides magneto service.

With this loan, it proposes to construct an automatic central office in Chapman Lake.

Jasper Telford is president and manager of the Chapman Lake Telephone Co.

•

Highland Telephone Cooperative, Sunbright, Tenn.; $722,000, third loan (Dec. 13).

The borrower plans to improve service for 457 rural subscribers and to furnish initial service to 287 farm families. The subscribers who will receive improved service are now being served by the Stearns (Ky.) Coal & Lumber Co., whose facilities the borrower plans to acquire. They include a magneto central office.

A new automatic central office is scheduled at Stearns. About 90 of the subscribers in the expanded area will be served from the borrower's present Petros exchange.

A portion of the latest loan will be used to complete the system previously authorized.

REA loans to this borrower total $2,435,000 which will make possible new and improved service to 3,929 subscribers.

W. H. Swain is president of the Highland Telephone Cooperative and Horace Wright is manager.

Power of Reason

"Reason gains all men by compelling none."—AARON HILL.

SAVES WITH BILLING CHANGE

Continued from page 24

business offices throughout the process. The chief benefit of the carbon copy is as a vehicle of communications both for our internal operations and between the company and delinquent subscribers.

These communications—notification from business office; to subscriber; to plant—used to be prepared manually. This meant three separate and time-consuming clerical operations with the accompanying three separate needs for checking data and three separate opportunities for error.

Formerly, all of these documents were prepared individually on typewriters. It was dull, tedious work performed under uncomfortable pressures of operating deadlines. Our experience has established to our complete satisfaction that it is far less expensive for us to find and throw away the paper we don't use than to create new records—even for a small minority of accounts.

The out-of-pocket savings on this operation are important to us in this expensive era, but we do not overlook the fact that the intangible benefits are at least as valuable. It is impossible, for example, to put a cash value on the increased smoothness of our operations now that the pressures of tying up whole exchange clerical staffs on delinquency notices is gone. Our employe morale is way up. We've benefited, but we can't assign a cash value to these improvements.

From a strictly cash standpoint, however, we have been able to trace a minimum of $1,000 per month in oper-

Mr. Oglesby inspects message unit cards at the IBM 604 Calculator.

Looking for:
● Service ● Reliability ● Nationally Known Telephone Supplies

?

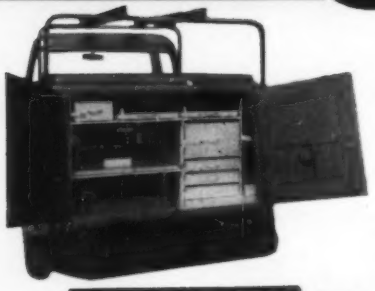
Then look to Lindsay, where prompt delivery of your order as specified is assured by fast, efficient, *personalized* service... backed by extensive warehousing of nationally known telephone supplies. Established in 1939, Lindsay is under second-generation management that believes a business can go only one way—forward.

LOOK TO THE LEADER... LOOK TO LINDSAY

THE LINDSAY TELEPHONE SUPPLY CO.
10409 Meech Ave., Cleveland 5, Ohio
Telephone Diamond 1-9212

SERVICE BODIES by

UTILITY BODY OAKLAND



Series I-40
INSTALLERS BODY

Special Truck Body developed for telephone installation and service work. Provides maximum storage space for necessary parts and materials, readily accessible, easily inventoried. An **advance design** incorporating all the **latest features**—easily adapted to varied urban and rural service problems.

Personnel Carrier Service Bodies

Service Bodies

Line Construction Service Bodies & Hydraulic Derricks

OVERALL LENGTH is 81", width 58" (approximately 6 feet across fenders). Length at top, 72¼", length at floor line, 79¼". Body designed for installation on any standard chassis with a 38" to 42" cab-to-rear-axle dimension. Space provided for either 4-foot or 6-foot ladders as specified and for all normal telephone installation and maintenance equipment—apparatus, directories, pay-out reel, wire, belts and materials. Spare tire is carried on special sliding tray in left-hand compartment.

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Please send price and delivery information on Series I-40 Installers Body. I would also like information on:

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MAIL COUPON TODAY

Check any additional information you would like.

Distributors in all leading cities

ational savings in our 130,000-station system. With this added to the other improvements, we are convinced that we are way ahead.

CROSS DETECTION

Continued from page 27

was given a field trial and, although it was able to detect potential crosses that could not be detected by the Whistler testset, it was never standardized for general use. It was felt that the high probe voltage would be an accident hazard, due mainly to the surprise element. The current involved was too minute to cause a lethal shock.

Although the high voltage Whistler testset proved unacceptable for field use, the circuit was of interest in that the capacitance of the circuit under test was connected in series with the oscillator feed-back circuit. Oscillation took place only when the probe was connected to a circuit under test instead of continuously, making it feasible to use an earphone as an indication of testset oscillation rather than a loudspeaker. Use of an earphone was desirable to minimize interference from central office noise and from other cross detection sets.

Field suggestions had indicated the need for such a modification, but rather than redesign the high voltage Whistler testset to include a headset and reduce the probe voltage in the interests of safety, it was decided to design a new testset using transistors rather than electron tubes. Such a testset could be worn comfortably by the tester and would be independent of the 110-volt utility supply for primary power.

Three mechanical designs were considered. One had the oscillator enclosed in a small plastic box to be clipped to the tester's shirt pocket or belt. Another had the oscillator built into a modified headset case. In the third design, the oscillator was enclosed in the test probe itself. After field trial of all three models, the one enclosed in the probe was chosen for ease of manufacture and the advantages of a hand-held tool.

The circuit of the accepted transistorized design is shown in *Fig. 3*, and provides the following test facilities:

(1) A portable oscillator that oscillates with a capacitance connected between the ground clip and the probe, with a self-contained power supply.

(2) A conventional low resistance tester's headset.

(3) A high resistance headset.

When the transistorized set is used for cross detection, switch S2 is operated in the direction to connect the headset receiver in series with the

battery and collector of transistor T2. Switch S1 is operated to close the battery circuit. The ground clip is connected to the office ground. If the test probe is then connected to a conductor terminal, a tone will be heard the frequency of which is determined by the capacitance of the conductor to ground and the setting of the R3 potentiometer.

This potentiometer, while operating as a tone control, is primarily an adjustment to take care of variations in transistors so that stock transistors may be used without selection during manufacture of the set. With the test probe progressively connected to each conductor in a group of clear conductors of approximately the same length, a series of tones of the same pitch will be heard.

If, however, two of the conductors are crossed, a tone nearly half an octave lower in pitch will be heard when the probe is connected to either conductor. If a conductor is crossed with office battery or ground, a tone of 100-200 cycles per second results, the same as if the probe were grounded.

Since a cross with either battery or ground produces the same tone, the ground clip is connected to the conductor under test and the test probe is connected alternately to battery and ground with S2 switch operated in the direction to connect the headset receiver to the ground clip and test probe through resistors R4, R5, and R6. If connection to battery produces a click in the receiver, it indicates that the conductor is crossed with ground. A cross with battery would be indicated by a clock when the test probe is grounded.

When the transistorized set is used as a high resistance test headset, resistor R6 limits the current that can be drawn through easily damaged components such as reed type relay contacts, to a safe value. When more current is desired as for temporary operation of a relay using the headset as a test conductor, R6 may be shunted out by operation of switch S3. With switch S3 operated the resistance of the headset is equivalent to that of the conventional tester's headset.

Obituary

MRS. EMMA G. ALLEN, mother of Harris G. Allen, president of three Wisconsin telephone companies—Northwest Telephone Co. of Tomah, and Milton & Milton Junction Telephone Co., and Boscobel Telephone Co.—died on Dec. 16.

Mr. Allen was an officer of the three above-named companies and a widow of the late John S. Allen, former president of the North-West Telephone Co., and former member of the Wisconsin Public Service Commission.

CALCULAGRAPH

Now Automatically gives you accurate Toll Call Records— up to 60 minutes

New style 60 minute elapsed time dial Model 33.
Elapsed time 56 minutes 8 seconds.

Photo courtesy of the General Telephone Company of Michigan

Now, Calculagraph, the modern dependable computer, automatically figures and prints toll calls up to 60 minutes —no need to add 30 minutes on long conversations.

Thus, Calculagraph adds one more feature to reduce human errors by busy operators and increases the volume of calls handled per operator. Assures you of all revenue due on every call.

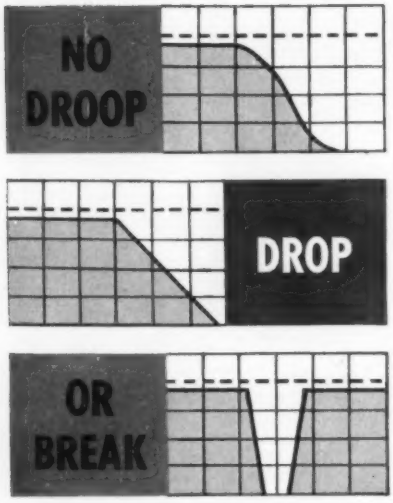
For accurate toll call records, for automatic computation of elapsed time, for more efficient operation, install the new 60-minute elapsed time Calculagraph on your switchboard.

Information on this new Calculagraph is yours upon request.

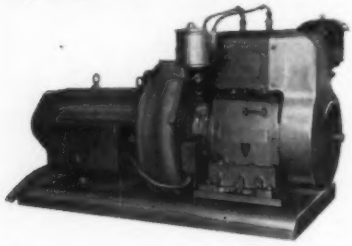
Write today for illustrated brochure to Dept. T.

CALCULAGRAPH Company
HARRISON, N. J.

DEPENDABLE ELAPSED TIME COMPUTERS SINCE 1892



in Communications with U. S. MICRO-POWER



Your Insurance Policy for . . .

Stable
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Communications Power

Micro-Power operates *with* the main source of power. No time consuming "load transfers." No "power outages" *even for precious seconds!*

Micro-Power Units are available in 1500, 3000, 5000 and 10000 watt capacities. For complete information, specifications, and demonstration, write . . .

UNITED STATES MOTORS CORPORATION
LIGHT US POWER
OSHKOSH · WISCONSIN

U. S. MOTORS CORP.
102 W. 5th Avenue
OSHKOSH, WISCONSIN

PUBLIC AND REGULATION

Concluded from page 37

same as public services which are provided by the government.

The distinction is not sufficiently made, and I think it is well that it be made known, that a public utility is just a matter of a man's privately-owned and operated business, and that the duty and function of the commission is to see that it does not abuse its monopolistic position; that regulation is a substitution for competition; but, nevertheless, that it is a private business which must survive as other private businesses do.

I think it is not at all improper to make it clear that it is operated for profit, and that if it is to continue to operate and provide a service, then just as any other business enterprise or industrial endeavor, it must produce a profit. I believe that most dissatisfaction and controversy and opposition to the present way of regulating utilities results from a lack of understanding.

We are living today in a period where life in general is extremely complex, and the complexity of the regulation of public utilities is something that I think can and should be made simpler so that all of those who use the services can have a better understanding of it.

Georgia Students Defend Telephone Habits

Adults are the ones who deserve the criticism they so unfairly heap on teen-agers because of bad telephone habits, Atlanta, Ga., students say.

In letters to the Atlanta *Constitution* this week, the majority of the young people charged that adults, especially women, spend far more time on the telephone than their children.

They admitted, however, that some teens do spend long, needless hours on the telephone, but they felt that this group was in the minority.

Irene Malone, 16, said that while teens do spend more time on the telephone, the criticism from adults is unjustified.

"I think our parents should realize that the telephone is today's teen-ager's handiest communication with our friends," she writes. She continued:

"It might have been theirs (parents) were it not for the fact that telephones weren't as plentiful and cheap as they are today. With today's modern push-button controls, everything has changed, including teen-agers.

"We have more to talk about, more to do, more to plan for, and more places

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to go. This means more time on the telephone. With so much going on it's no wonder the telephone has become so much a part of teen-agers' lives."

Adults do hound teen-agers too much about telephone habits, says Darrell Crawford, 17. She said:

"A great number of teen-agers do have bad telephone habits, but how can the older people talk about the bad telephone habits of teen-agers when they themselves have bad telephone habits?"

Darrell thinks that women stay on the telephone longer than anyone else.

Some young people like to use the telephone because it helps them relax and they feel freer to talk, writes Rhodell Clarke, 16. He said:

"You can feel more at ease than with people staring at you while you talk. A pleasant conversational tone and a well-modulated voice is a great blessing to those you talk with and telephones can help develop this."

One point brought out by Judy Miller was that, by using the telephone more, teen-agers would stay off the streets and not get into as much trouble.

"I had much rather see a teen-ager on the telephone than running around loose on the streets," she concludes.

Parents rave about the high telephone bill if their children talk too much, complains Pat Collins, 15. She wrote:

"They must not realize they will have to pay the bill even if it is not used. So we teen-agers take advantage of this and get our money's worth.

"The telephone was made to talk over, so why not use it to its best advantage?"

Among the few who found teens guilty of bad telephone habits was Irene Hill, 17, who said:

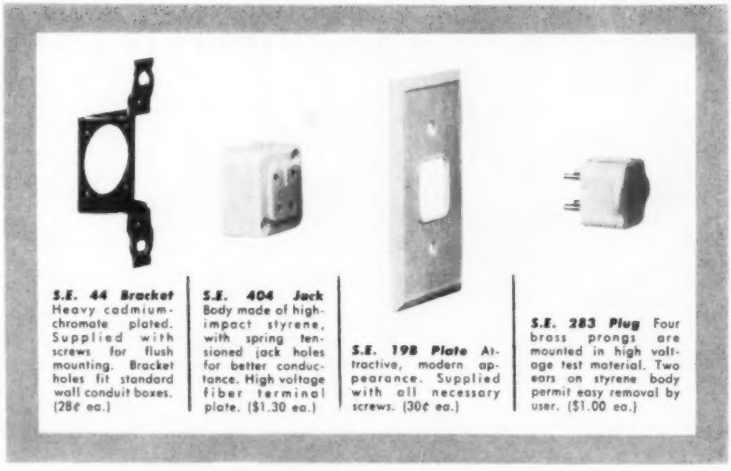
"I think teen-agers spend entirely too much time on the telephone. Most of the jokes we hear about the amount of time teen-agers spend on the telephone are really not jokes at all. They are really the truth put in a joking manner.

"I think telephones should be used more in business and less for carrying on long conversations in which the chief object is to kill time. Long telephone conversations on a party line should especially be avoided."

Further Polio Research

March of Dimes contributions support polio research projects now being conducted to learn more about the duration of immunity of the Salk vaccine, a possible one-shot inoculation and an oral method of immunity.

What's New at SUTTLE



S.E. 44 Bracket Heavy cadmium-chromate plated. Supplied with screws for flush mounting. Bracket holes fit standard wall conduit boxes. (28¢ ea.)

S.E. 404 Jack Body made of high-impact styrene, with spring tensioned jack holes for better conductance. High voltage fiber terminal plate. ($1.30 ea.)

S.E. 19B Plate Attractive, modern appearance. Supplied with all necessary screws. (30¢ ea.)

S.E. 283 Plug Four brass prongs are mounted in high voltage test material. Two ears on styrene body permit easy removal by user. ($1.00 ea.)

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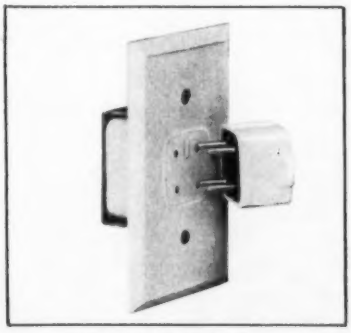
Highest Quality — Moderately Priced

Now, for the first time, Independent Telephone Men can order a flush or non-flush type, 4-prong, wall-mounting plug and jack assembly from Suttle. These units are superior in quality and performance to all existing units . . . yet they cost no more.

Of a modern design, these Suttle assemblies combine attractiveness with durability. Plug and jack bodies as well as the wall plate are made of high-impact styrene . . . easy to clean, easy to look at. These units are available in brown or ivory styrene—be sure to specify the color desired in your order.



Note jack is flush with plate.

The S.E. 404 jack is the non-flush type, but with the addition of the S.E. 19B plate and S.E. 44 bracket it becomes a completely flush, modern installation.

Specify Parts By Number

S.E. 44 Bracket — cadmium-chromate plated ..... 28¢ each

S.E. 404 Jack—spring tensioned jack holes ..... $1.30 each

S.E. 19B Plate—with necessary screws ..... 30¢ each

S.E. 283 Plug—four brass prongs ..... $1.00 each

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Device That Reads Handwritten Numerals Designed by Bell Labs

AN EXPERIMENTAL device the size of a portable typewriter that can read handwritten numerals or identify numerals as they are being written was announced on Dec. 13.

Invented by Tom L. Dimond of Bell Telephone Laboratories' system engineering department, the machine was demonstrated at the Eastern Joint Computer Conference held on that date in Washington, D. C. With modifications the equipment could be used to read handwritten letters, Mr. Dimond said.

The machine may eventually become a valuable addition to telephone offices. It could be important in any situation where it is necessary to write and identify large quantities of numerals.

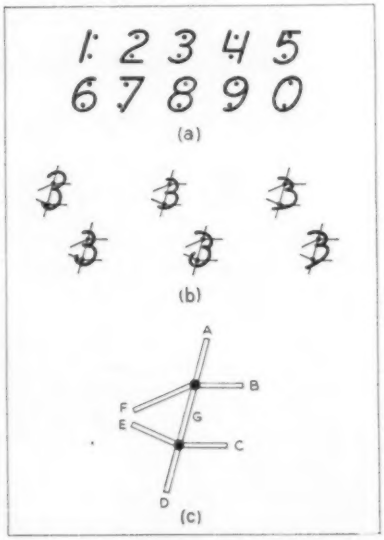

Fig. 1. (a) An illustration of how the two-dot constraint serves to guide the formation of numerals. (b) Wide variations are permissible in forming the numeral 3. (c) Layout of the constraining dots and radius vectors.

For example, each long distance ticket used contains 20 to 30 handwritten characters. Approximately two billion of these tickets are processed each year. A technique for picking up the information on these tickets with a machine rather than the human eye would be a tremendous aid in preparing telephone bills.

The machine demonstrated on Dec. 13 recognizes numbers as they are being written and indicates the numeral by lighting up the correct digit on a numbered panel. The writing is done with a metal stylus on a specially-prepared writing surface. Two dots, one above the other, are used as reference points (See *Figs. 1 and 2*). Seven sensitized lines extend radially from these two dots. Numerals are recognized by the machine, depending on which lines are crossed.

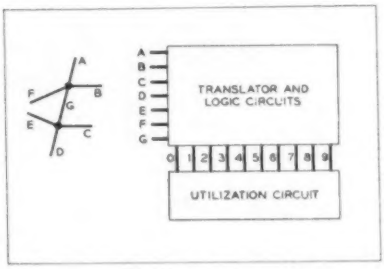

Fig. 2. Block diagram showing the basic operation of the device for character recognition.

To clear the device for the next number, the writer touches the stylus to a special plate which causes the previous number to be "erased."

To recognize previously written numerals, such as those on a long distance ticket, it is necessary to write with a pencil containing a conductive lead. The ticket is then inserted in the machine into a special slot under a plate that has seven sensitized lines.

The machine then uses the same principle for recognizing numbers already written as it does for the ones written on the machine with the stylus. It determines which sensitized lines have been crossed and indicates the proper number by illuminating a numeral on the lucite panel. This information could be transferred to an accounting machine, computer or other data processing device.

Several experimental models have been built at Bell laboratories. Each is completely self-contained.

The device is operated from flashlight batteries and requires no outside power source. Its small size is made possible by the use of transistors.

No Corner on Rascals

"While candidates for sainthood are not in generous supply in the business community, the proportion of rascals is no greater than that found among other groups of people."—BENJAMIN F. FAIRLESS, *president, American Iron & Steel Institute.*

Ebersold of Illinois Bell Assumes AT&T Post

Charles W. Ebersold, general commercial manager of Illinois Bell Telephone Co., has accepted the position of assistant vice president of the American Telephone & Telegraph Co. He will be responsible for a long-range program in the public relations field.

C. W. EBERSOLD

Succeeding Mr. Ebersold is Frank J. Buskens, commercial manager of the Illinois Bell company's upstate division.

Mr. Ebersold began his telephone career in 1938. A graduate of Ohio

F. J. BUSKENS

State University where he received degrees of Bachelor of Arts and Doctor of Laws, his first job was in Illinois Bell's commercial department.

After serving in various supervisory capacities, he joined AT&T's operations and engineering department in 1947 as an engineer in business office operations. In 1951, he joined the Wisconsin Telephone Co. as district commercial

it's dated

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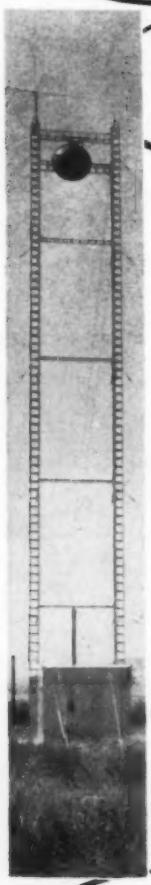

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manager. The following year, he was appointed general commercial supervisor.

He returned to Illinois Bell in 1953 and became general commercial manager in 1954.

Mr. Ebersold served with the Army Signal Corps from 1943 to 1946, being discharged a captain.

Mr. Buskens was graduated from Northwestern University in 1929 with a Bachelor of Science degree in commerce and started working for Illinois Bell as a student manager soon after.

Later, he was commercial manager in the Lake View area of Chicago. He also worked in the company's upstate division and in the personnel division before becoming division commercial manager in 1956.

Tells Need for Adequate Earnings to Keep Investors

A brief yet effective line of reasoning leading to the need for higher rates to secure an adequate return plus investor interest, was presented on Dec. 18 in *The Bulletin* issued to Northern California area employes of Pacific Telephone & Telegraph Co. It was headed: "What Is a Dividend?", and proceeded as follows:

"What is a dividend? It's the money you pay somebody for what he has invested in your business. After all, he invested his money in the hope of making something out of it.

"Last September we paid every shareholder of Pacific Telephone $1.75 for each unit of stock he held.

"If investors are wise financially, they pay special attention to the earnings out of which shareowners are paid.

"For the period in which our shareowner got his $1.75, our company earned, per share, $2.29. This means 54 cents left over, or surplus for other needs. A year ago, he'd have found $2.70, or 95 cents to spare.

"Would he be encouraged to buy more of our stock, seeing that the protection behind his dividend was going down? Still, we badly need investors to help provide the money for our growth. The only answer is higher earnings per share. And the only way to ensure that is to get higher rates."

General of California Amends Rate Application

General Telephone Co. of California on Dec. 20 filed an amendment to its application for increased rates, presently before the California Public Utilities Commission. At the same time, the company petitioned for early relief on portions of its original application, particularly, non-recurring charges such as installation and service connection charges.

This amendment will not produce any increase in the company's net revenues over that requested in the October application. Edwin M. Blakeslee, company president, stated the amended application was necessary at

Members of REA's Telephone Advisory Committee are shown here as they met in Washington recently with REA Administrator David A. Hamil and members of his staff. Shown around the conference table are: Joe Roberts of Gallatin, Mo.; Donald H. Brooks of Hazen, N. D.; Edward D. Hildreth of Alexandria, Tenn.; Harold L. Ericson of Hector, Minn.; S. A. Lane of Russellville, Ark.; Herbert H. Welsh of Nortonville, Kans.; Daniel B. Corman of Glasgow, Ky.; Kenneth A. Knudson of Irene, S. D.; Dean Searls of Camp Point, Ill.; Orla L. Moody of New York, N. Y.; Administrator Hamil; Richard B. Crowe of Dos Palos, Cal.; J. K. O'Shaughnessy, former assistant REA administrator; Ray G. Zook, assistant REA administrator; Roy C. Boecher of Kingfisher, Okla.; W. C. Henry of Bellevue, O.; John Birchmore of Comer, Ga.; Harold C. Ebaugh of Havre, Mont.; Fred B. Harris of Jackson, Mich., and Riggs Sheppard of Hondo, Tex.

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INDEPENDENT

WB

12-8

WHITNEY BLAKE COMPANY

WELL BUILT WIRES SINCE 1899

NEW HAVEN 14, CONNECTICUT

this time because of certain changes which have occurred since Oct. 9 when the original application was filed with the commission.

The amended application reflects among other things:

(1) An increase on Dec. 1, in operating costs as the result of an annual 1.4 million dollar general wage and fringe benefits increase to its daily wage employes;

(2) The recent interim decision of the California commission which authorized an increase in message unit charges for the four telephone companies serving the Los Angeles metropolitan area.

On Oct. 9 last year, General filed its application asking for rate relief amounting to 12.5 million dollars. On Dec. 10, the commission authorized an adjustment of message unit charges in the Los Angeles metropolitan area effective Jan. 6. This will increase the company's gross revenues by about $2,230,000 after payments are made to the other three telephone companies which interconnect their lines to complete calls in this area.

The original amount requested is reduced from 12.5 million dollars to $11,052,000. The net effect of all revisions results in an increase in annual gross revenues amounting to $771,000 over the original application. This, however, will not produce any increase in the company's net revenues over the request in the original application.

Mr. Blakeslee stated in the October application that General's rate of return is progressively declining month by month. He said that the company must have at least a 7.2 per cent return on its investment. In 1958, under present rates, including the new message unit rate, the company's rate of return will drop to 5.54 per cent. This downward trend is caused by the rapid expansion of the company for which tremendous amounts of new plant and equipment are continuing to be added at present high costs of labor and materials.

Illustrating how costs of providing telephone service have skyrocketed, Mr. Blakeslee said that the current average investment for each telephone is $350 or $137 more than in 1950 representing an increase in investment of 64 per cent for each telephone.

Asks Approval of Common, Preferred Stock in N. C.

Morris Telephone Co., Roxboro, on Dec. 20 asked the North Carolina Utilities Commission for permission to sell 1,050 shares of 5 per cent cumulative preferred stock at a par value of $100 a share and to issue and sell 2,800

shares of $25 par value common stock at $30 per share.

The company, which serves Roxboro, Hillsboro, Yanceyville and Efland, is planning to expand its facilities to serve customers in the Prospect Hill area.

Missouri Independent Wins $6,702 Rate Increase

The Conway-Niangua Telephone Co. has secured Missouri Public Service Commission authority to increase its gross rates by $6,702 a year to meet increased operating costs, it was reported on Dec. 20 (TELEPHONY, Sept. 14, p. 43).

The company serves Conway, Niangua and Phillipsburg.

Olszyk Named Kellogg Public Relations Manager

Louis Olszyk has been appointed public relations manager for Kellogg Switchboard & Supply Co., a division of International Telephone & Telegraph Corp., George T. Scharffenberger, Kellogg president, has announced. Mr. Olszyk will also direct the firm's advertising program and IT&T's public relations activities in part of the Midwest.

LOUIS OLSZYK

For the past nine years director of public relations and assistant director of industrial relations for Curtiss Candy Co., Mr. Olszyk is a native of Milwaukee, Wis., was graduated from Marquette University in 1939 and later attended the University of Chicago's school of business. He was a reporter and assistant picture editor for the Milwaukee *Journal* before enlisting in the U. S. Marine Corps during World War II. He was recalled to service with the Marines during the Korean conflict.

Prior to Curtiss, Olszyk was public

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INDEPENDENT

11-8 WELL BUILT WIRES SINCE 1899

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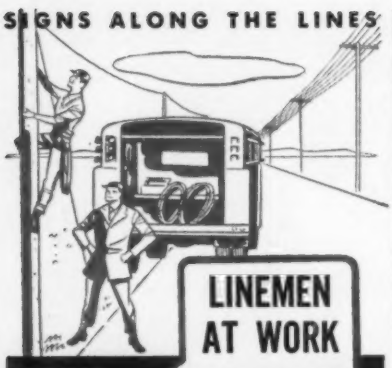
SIGNS ALONG THE LINES



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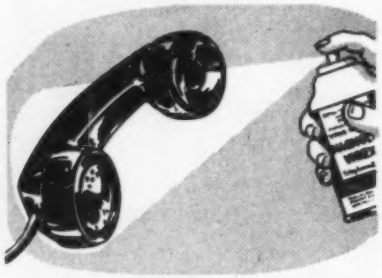

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relations field director of the Veterans Administration for Illinois, Indiana and Wisconsin, and later served as administrative assistant to the director of the Illinois Service Recognition Board which administered that state's soldiers' bonus.

Mr. Olszyk is a member of the Marine Corps Combat Correspondents Association and Naval Reserve Public Relations Company 9-2.

Stromberg Opens Rochester Branch Warehouse

Complete warehousing and shipping facilities and an expanded office area, centralized at 1040 University Ave., Rochester, N. Y., have been announced by the Rochester branch sales office, a separate function of the telecommunication division of Stromberg-Carlson, a division of General Dynamics Corp.

With the completion of the new Stromberg-Carlson administration building and related department moves, all functions of the Rochester branch, including sales, sales engineering, ordering, billing, warehousing and shipping, have been brought together for faster, direct service to Independent telephone companies throughout the northeast states. These include New England, New York, Pennsylvania, Ohio, New Jersey, Delaware, West Virginia, Maryland, and the District of Columbia, according to Branch Manager J. S. Ottalagana, who is in charge of the operation.

Items in stock at all times, according to Mr. Ottalagana, include the full range of telephone instruments, component parts, accessories, PBX and convenience systems, power and test equipment, wire, cable, pole line hardware, brackets, protectors, insulators, and miscellaneous supply items.

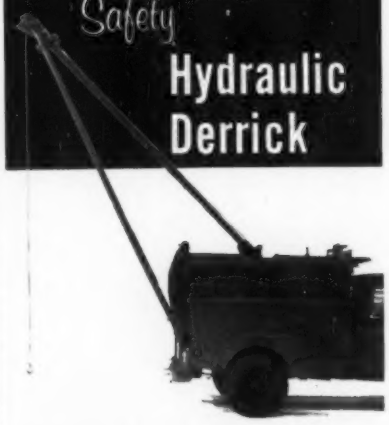
Changes Address

In an advertisement of the Kellogg Switchboard & Supply Co., appearing in the Nov. 30 issue of TELEPHONY, the address of Ronald W. Hall, Western divisional sales manager was erroneously given as Burlingame, Cal. Mr. Hall's correct address is 4501 Truman Road, Kansas City 27, Mo.

Blind Spot in Democracy

"All governments, like all men, 'would be tyrants if they could'; and in a way democracies (and welfare states), which should be best at tying tyrants' hands, are worst of all, because the bureaucrats have such good credentials. The honest, able, and dutiful civil servant who brushes aside individual objections in an ever-widening field does so in the name of the people —for the public good . . ."—EDITORIAL STATEMENT, *The Economist.*

TRUCO Safety Hydraulic Derrick



- TRUCO safety Hydraulic Derrick "middle leg" allows simple, fast, safe one-man operation.
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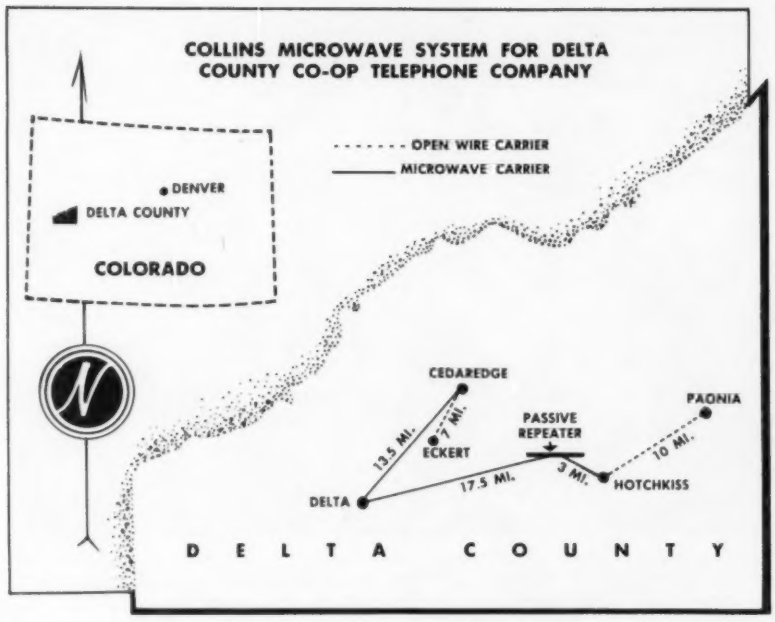

Collins Radio Sells Carrier Microwave System in Colo.

Collins Radio Co. has announced the sale of a $300,500 microwave and wire line carrier system to the Delta County Cooperative Telephone Co. in Colorado.

The new 176-voice channel system, which is expandable to 240 channels and features frequency diversity, will fulfill requirements for toll trunks and extended area service between the towns of Eckert, Cedaredge, Delta, Hotchkiss and Paonia. When completed in August 1958, the system will provide 2,700 persons in the area with toll connections. At present, only a few persons residing near Delta have toll service.

Delta County Cooperative Telephone Co. will be the first Independent telephone company to utilize microwave communication in Colorado.

The system will consist of an open wire line between Eckert and Cedaredge, a distance of 7 miles; a 13.5-mile microwave link between Cedaredge and Delta; a 20.5-mile microwave link between Delta and Hotchkiss, and a 10-mile open wire link between Hotchkiss and Paonia.

Due to terrain, a 20 by 32-foot billboard passive repeater antenna will be used to relay the microwave signal between Delta and Hotchkiss. The passive repeater will be located 3 miles from the Hotchkiss station.

Each channeling rack in the new system will accommodate 12 channels on each side, and each rack side which contains channeling equipment includes cabling for the full 12 channels. In expanding the Collins system for full rack capacity, installed shelves may be expanded by the addition of plug-in modules, and beyond this point, equipment shelves and modular plug-in units can be added.

A total of 240 channels can be accommodated on one radio-frequency head which will permit the use of 240 voice band circuits on any one hop in the system without additional radio-frequency equipment. A breakdown of voice channels by stations follows:

At Eckert, 19 channels are dropped —six toll trunks to Delta, six extended area service (EAS) channels to Hotchkiss and seven extended area circuits with five future circuits to Delta.

At Cedaredge, 24 channels are dropped—seven toll trunks to Delta with five future, 10 EAS channels to Delta with two future and seven extended area circuits to Hotchkiss with five future.

At Delta, 75 channels are dropped—10 toll trunks to Paonia, 11 toll trunks to Hotchkiss, 24 EAS circuits to Hotchkiss, six toll trunks to Eckert, seven EAS with five future to Eckert, 10 EAS with two future to Cedaredge and seven toll trunks with five future to Cedaredge.

At Hotchkiss, 48 channels are dropped—11 toll trunks to Delta, 24 EAS circuits to Delta, six EAS channels to Eckert and seven EAS circuits to Cedaredge with five future.

At Paonia, 10 channels are dropped.

Installation on the system, which will operate in the 6000-megacycle frequency range, is scheduled to begin in July 1958.

FOR SAFEST! FASTEST! SUREST!
"LIVE" WIRE CUTTING!
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HKP PORTER COHARDITE ELECTRIC WIRE CUTTER
1st Choice of most UTILITY COMPANIES
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Shear-action cutter — for general cutting of all soft or hard steel cable or wire rope up to ¾". Notched jaws lock cable during cut, minimizing deforming.
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Designed for cutting soft, non-steel power cables, insulated or not, up to 1⅜" O.D. Jaws pass each other for clean cutting. A must for every efficient utility crew.
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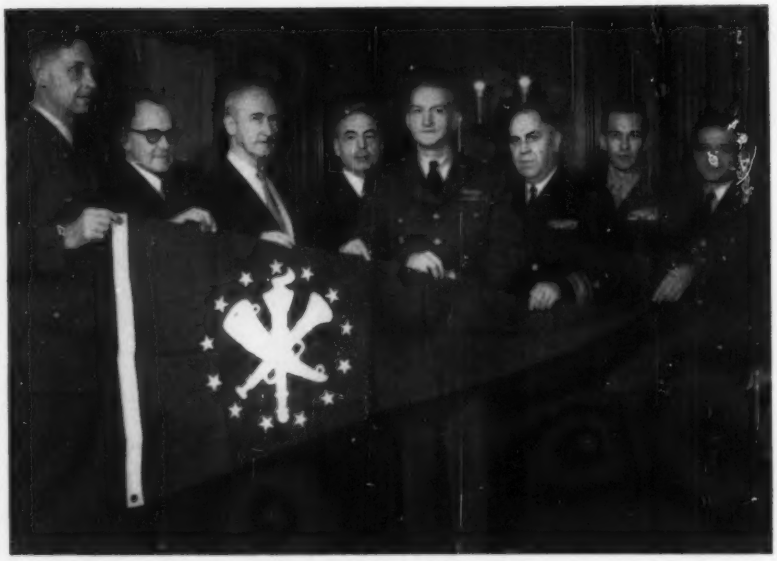

Holding pennant symbolic of the Department of Defense Reserve Award to International Telephone & Telegraph Corp. are, from left to right: Col. W. E. Jennings, signal officer, First U. S. Army; Capt. Roland C. Lawver, USN, communications officer, Third Naval District; Maj. Gen. Edmond H. Leavey, U.S.A. (Ret.), president, International Telephone & Telegraph Corp.; Lt. Col. D. Talley, commanding officer, 352nd Signal Battalion (ITT-sponsored unit); Maj. Gen. Raymond E. Bell, chief, U. S. Army Military District, New York, who made the presentation; Rear Adm. Henry C. Perkins, USN, commandant, Third Coast Guard District; Lt. Col. William Nesbitt, Marine Corps information officer, New York City; and Maj. Joseph Spadoni, executive officer, New York Air Reserve Center.

Defense Department Cites IT&T for Cooperation

International Telephone & Telegraph Corp. was cited on Dec. 4 by the Department of Defense "for outstanding cooperation with the Reserve Program of the Armed Forces."

The Department's Reserve Award was made at company headquarters in New York City by Maj. Gen. Raymond E. Bell, chief, U. S. Army Military District, New York, and was accepted by Maj. Gen. Edmond H. Leavey, U.S.A. (Ret.), president of IT&T.

Representing the four other armed services at the ceremony were Rear Adm. Henry C. Perkins, commandant, 3rd Coast Guard District; Capt. Roland C. Lawver, communications officer, 3rd Naval District; Lt. Col. William Nesbitt, Marine Corps information officer, New York; and Maj. Joseph Spadoni, executive officer, New York Air Reserve Center.

In accepting the award, General Leavey referred to "the great and increasing importance of telecommunication and electronics in modern warfare and, in particular, to the current race for missile supremacy. However, we must not let our emphasis upon science and scientists blind us to the fact that the most fantastic weapon or communication system is useless without the trained military personnel to operate it. That is why we at IT&T are 100 per cent in back of Department of Defense Reserve activities, and will so remain."

Executive Changes Made By AE International

David C. Clegg has been elected vice president and general manager of Automatic Electric de Venezuela, C. A., with headquarters at Caracas, Venezuela. Phillip M. McCullough, who was instrumental in the formation of the Venezuelan subsidiary earlier this year, remains as a vice president and director of the Venezuelan company in addition to his assignment as vice president of Automatic Electric International, Inc. of Northlake, Ill.

Mr. Clegg, who was vice president and general manager of Automatic do Brasil, S. A. in Sao Paulo, Brazil, prior to this new assignment, is a 1936 graduate of the United States Naval Academy. He joined the Automatic Electric organization on graduation and served for several years in the company's New York, Los Angeles and San Francisco offices.

At the outbreak of World War II, Mr. Clegg was called back to active duty as a naval officer for four years, serving much of the time as an instructor in professional subjects at the Naval Academy of the Venezuelan navy. Since the end of the war his

D. C. CLEGG

Automatic Electric assignments have been concerned with sales engineering activities in Central and South America.

Mr. McCullough is an electrical engineering graduate of the University of Nebraska. He has been with Automatic Electric as a key executive in its international activities since 1944, plan-

P. M. McCULLOUGH

ning and managing a wide range of projects in Europe, the Far East and South America. Prior to this time he had served as vice president and general manager of the Mexican Telephone & Telegraph Co., as a General Motors official in Spain and North and West Africa, and as chief of the Inter-American Communications Division of the Foreign Economic Administration.

Undying Flame

"Imparting knowledge is only lighting other men's candle at our lamp, without depriving ourselves of any flame."—JANE PORTER.

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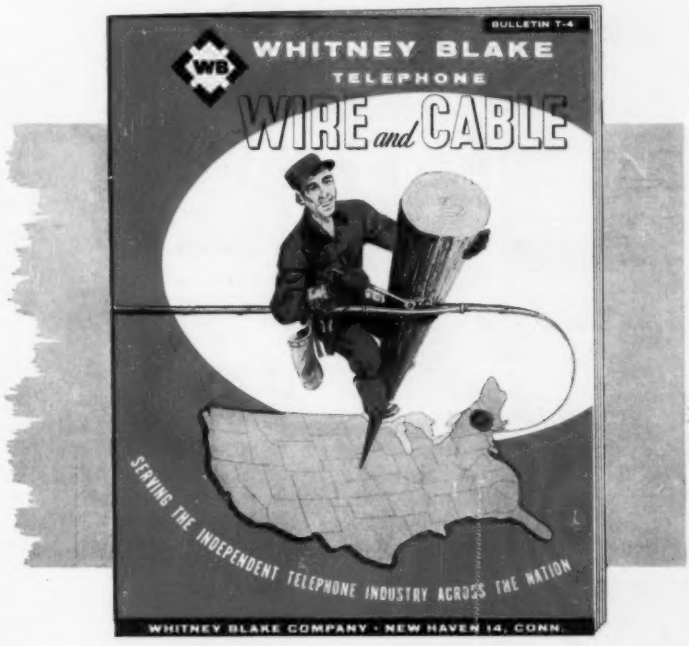
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Speed erection and maintenance of Telephone and Utility lines with this 6" Field Range Finder. Measure line clearance, spacing and sag from the ground. Measure distances from 8 ft. to 100 ft. with accuracy to within 2%. Especially useful for inaccessible objects and places. These are sturdily built instruments . . . of such compact size they're easily carried in pocket. Dependable for years of trouble-free service in rugged use. Available in two models —Direct Vision and Overhead Prism. Each supplied with a top-grain genuine leather carrying case. Order by Stock Number (open account to rated firms).

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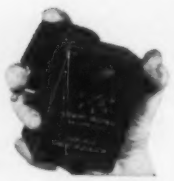
Locates Trouble FAST

1000 Cycle TRANSISTOR OSCILLATOR

Model J



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Self contained mercury battery with operating life over 700 hours.

Pocket size, 2¼"x3"x4", Wt. 10.3 Oz.

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Aerial view of the new Homelite chain saw plant in Gastonia, N. C., showing the 360-foot square building with its windowless, one-story construction. The two-story entrance section has offices below and a spacious cafeteria above.

Homelite Opens New Chain Saw Plant

Homelite, a division of Textron, Inc., builder of chain saws, on Nov. 25, formally opened its new air conditioned chain saw plant in Gastonia, N. C. The new 360 square foot factory makes use of "straight flow" manufacturing techniques coupled with the latest automatic machinery.

In keeping with the trend toward "ranch style" architecture, the new unit is a one-story building, with a brief second story on top. Lowslung, only 14 feet clear height in the main area, the plant covers 143,000 square feet of ground space and presents an almost windowless facade. It is of brick, concrete, and steel construction with long span steel joints supporting the roof to eliminate the clutter of too many columns in the interior.

Another feature of the new plant is the electric power system required to run the intricate machines which turn out the chain saws. Supplied directly from 4,400 volt high tension lines through a completely equipped substation on the property, this power is carried through the manufacturing area by continuous bus ducts, also supported on the steel framework. Anywhere along the duct, power plugs may be inserted to accommodate equipment, thus giving unlimited flexibility in arrangement.

The building is of fire-resistant construction throughout, meaning all the materials which went into it are incombustible. A completely automatic carbon dioxide sprinkler system doubly insures the safety of the building. For emergency use, a 200,000-gallon water storage reservoir is equipped to feed a 1,000-gallon per minute fire pump at a minute's notice.

To meet the problem of stream contamination, Homelite installed a treatment plant for sanitary waste, comprising a septic tank and sand filters large enough to serve a town of 1,000 population. Process waste, the acid and chrome-tainted rinse water which comes from the finishing room, is taken care of in a separate disposal installation. This unit is comprised of two redwood tanks in which chemical neutralization takes place. With these two safeguards, Gastonia's nearby streams will remain clean and clear.

Eight overhead conveyors, the longest over 1,000 feet in length, take over the job of material handling from the paint line through assembly and testing to final packaging.

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C. M. Christiansen Co.—Northern White Cedar Poles, Pentachlorophenol treated. Plant and Yards, Phelps, Wis.

Dierks Forests, Inc. (formerly Dierks Lumber & Coal Co.) Wood Preserving Division, 810 Whittington Ave., Hot Springs, Arkansas. Southern Pine select poles, all sizes and lengths, creosote and penta-pressure treated. Prompt shipment.

Eppinger & Russell Co., 80—8th Avenue, New York 11, N. Y.—Creosoted Poles and Cross Arms. Plants: Jacksonville, Fla., Norfolk, Va., Eddington, Pa.

International Creosoting and Construction Co., Galveston, Texas.—Creosoted Southern Yellow Pine Poles. Plants Beaumont and Texarkana, Texas.

International Paper Co., Long Bell Division, 926 Grand Ave., Kansas City, Mo.—Pressure-treated Southern Pine and Douglas Fir Poles. Creosote and Penta preservatives.

Montana Pole & Treating Plant—Box 2004, Butte, Montana. Penta-Pressure treated Lodgepole Pine and Western Larch Poles. Inquiries invited.

Texas Creosoting Company—512 Main Street, Orange, Texas—Creosoted Southern Yellow Pine and Douglas Fir Poles. Can also treat with "Penta."

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PLANT SUPERINTENDENT wanted for expanding telephone system of approximately 4500 stations in south central Minnesota. Position will require supervision of construction and maintenance, plant accounting, and supervision of dial cutovers. Call Harold L. Ericson, Hector, Minnesota, collect. Telephone VIking 4-3633.

PATENT ATTORNEY between ages of 30 and 45 wanted to assume responsibility for patent work of Law Department of corporation located in Chicago area. Applicant should have electrical engineering and law degrees, should be admitted to a state bar to practice in U. S. Patent Office and should have at least five years patent law experience in electrical work. Applicants with telecommunications experience will be given preference. Submit résumé of education and experience and state salary requirements. All replies will be treated confidentially. Write Box No. 4049, c/o TELEPHONY.

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TELEPHONE COMPANY approximately 1000 stations. Will consider smaller or larger company. Any location. Write Jack Williams, 5246-A Auth Road, S.E., Washington 23, D. C.

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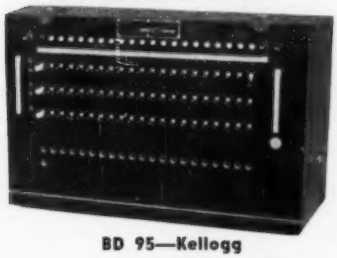

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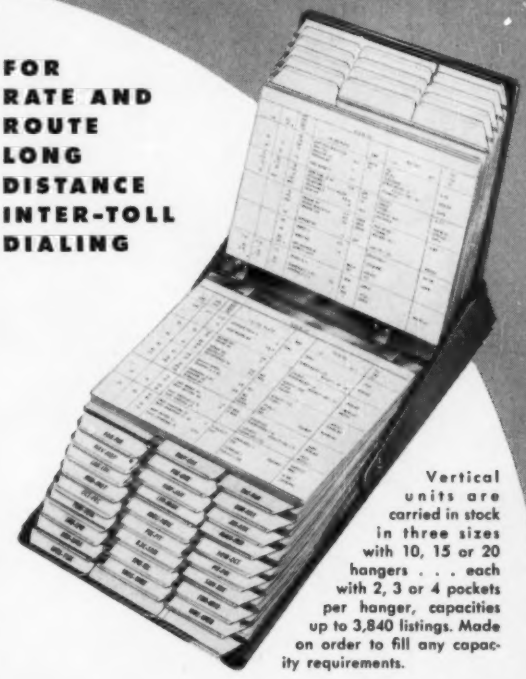

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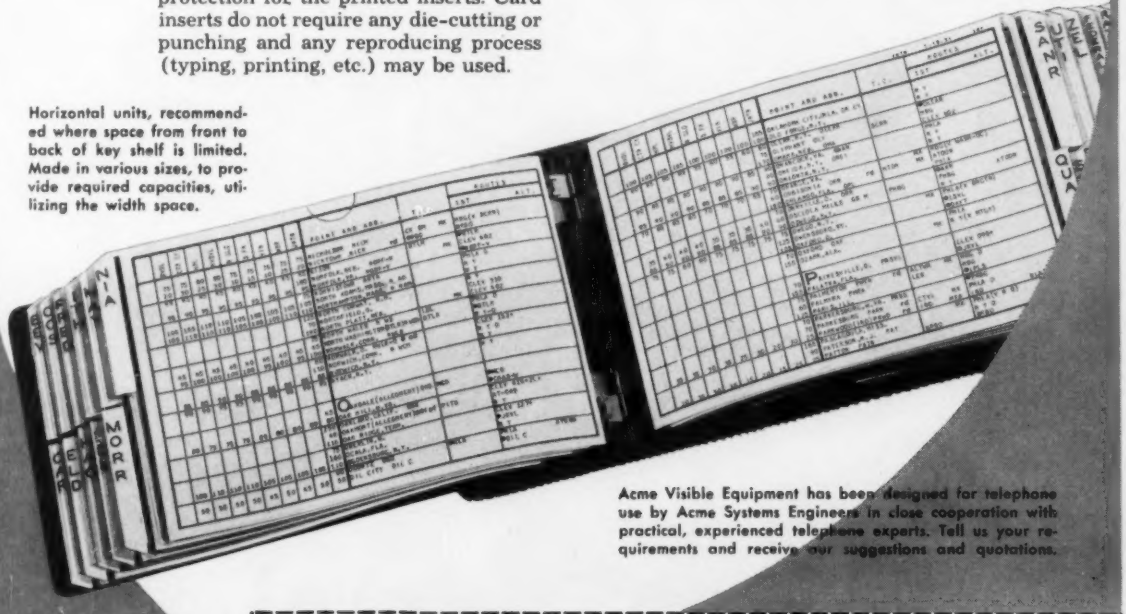

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